

# MOTOR AGE



CHICAGO TOUR PASSING THROUGH NILES, MICH.

## Moline and Staver Chicago Winners

Van Dervoort Entry Captures Roadster Class in Five-State Reliability, Ties For First in Touring Car Class, and Takes Team Trophy—Staver and One Moline Have Only Perfect Scores—Grout Lands Fuel Economy Prize

CHICAGO, Nov. 5—Seventeen cars started in the fifth annual reliability contest of the Chicago Motor Club which was concluded last Friday; fifteen finished; nine had perfect road scores and when the technical examination was completed Saturday night this number had been cut down to two—Salisbury's Moline and Knudson's Staver-Chicago, both in the touring car class.

It required this technical examination to decide the winners of the touring car and roadster classes and the team cup and the final report gave the honors in the touring car class to the Moline and Staver-Chicago, while in

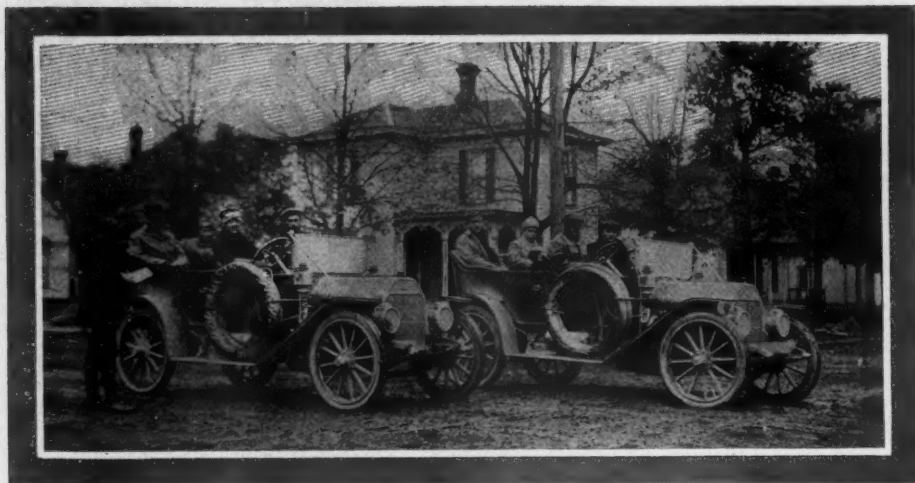
the roadster division Wicke's Moline captured a second leg on the Van Sicklen cup, which it also won last year. Wicke, though, was not in the perfect score class, but his 4 points were fewer than debited against any of his competitors. The team trophy for the two best aggregate scores by one make of car went to

the Moline, just as it did a year ago. As for the fuel economy prize, the Standard Oil Co. trophy, that went to the Grout, driven by H. E. Halbert.

All these results were not reached without a process of elimination that was of the sort for which the Chicago Motor Club is famous. First there came the long tour itself, a journey of 1,355.7 miles through five states, with night stops at Indianapolis, Louisville, Cincinnati, Columbus, Detroit and Grand Rapids, which eliminated eight of the cars. Then came the brake and clutch tests Saturday morning which still further reduced the field, while the technical



NOON CONTROL AT WASHINGTON COURT HOUSE, O.



#### MOLINE TOURING CAR ENTRY

*F. G. Salisbury, No. 2, tied for first with perfect score; No. 1, Van Dervoort driver, had 4 points penalty in the technical examination*

examination as conducted by F. E. Edwards, George W. Gaidzik and David Beecroft completed the task of evolving the winners.

#### Many Honors for Moline

To the Moline belongs the chief honors of the long contest, for in addition to tying for the touring car cup and winning the Van Sicklen trophy in the roadster section and taking the team prize, all four Molines went through with perfect road scores. Three of these were penalized in the technical examination. Neil Van Dervoort's No. 1 Moline was given 4 points for a loosened radiator support. The Wicke Moline roadster also drew 4 points for a leaky radiator, while the Boone Moline roadster was given 54 points for a broken starting crank bracket and a loose radiator support. The Staver-Chicago came into the limelight through the fine work of Knudson, who not only had a perfect road score but also handled his car so well that the technical committee could find nothing wrong when it was subjected to a rigid test. The other Staver was sixth in the final rating, its main trouble being a front wheel bearing which cost it its road score.

Halbert in the Grout started in the test



#### HALBERT'S GROUT

*Winner of the Standard Oil trophy given as fuel economy prize*

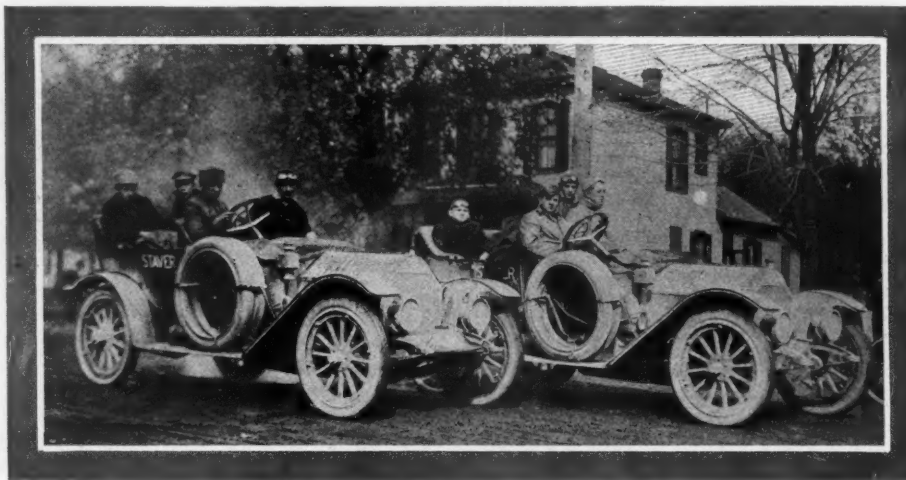
with the idea of winning the Standard Oil trophy for fuel economy which last year was taken by the Cunningham. The Grout was a class winner in the Chicago economy test last spring and Halbert was out to repeat. After he lost his perfect

score the second day he devoted all his time to saving fuel, with the result that he put his big roadster through the run on a fuel consumption of 77 gallons. This was a trifle more than was used by the Bergdoll, but the weight of the Grout enabled it to top the list.

When the tour was completed it was found that perfect road scores had been made by No. 2 Moline, No. 10 Staver-Chicago, No. 1 Moline and No. 5 Halladay in the touring car class and by No. 100 Moline, No. 101 Moline, No. 102 Oakland, No. 103 Velie and No. 105 Bergdoll. Of the others the Abbott-Detroit and the National roadster did not finish, the former withdrawing at Niles, Mich., the last day because of the broken spring, while the National roadster overshot a turn near Hobart and was stuck in the sand, being left there over night by its owner, Paul Strauss, who was satisfied to seek shelter in a neighboring farm house.

#### Many Cases of Spring Trouble

Notwithstanding the fact that only two of the cars went through the entire contest with perfect scores, both road and technical, the results of the trial are some-



#### THE STAVER-CHICAGO TEAM

*No. 10 Staver, driven by Knudson, had one of the two perfect scores in the touring car class after the technical examination*

#### FIFTH ANNUAL RELIABILITY CONTEST OF THE CHICAGO

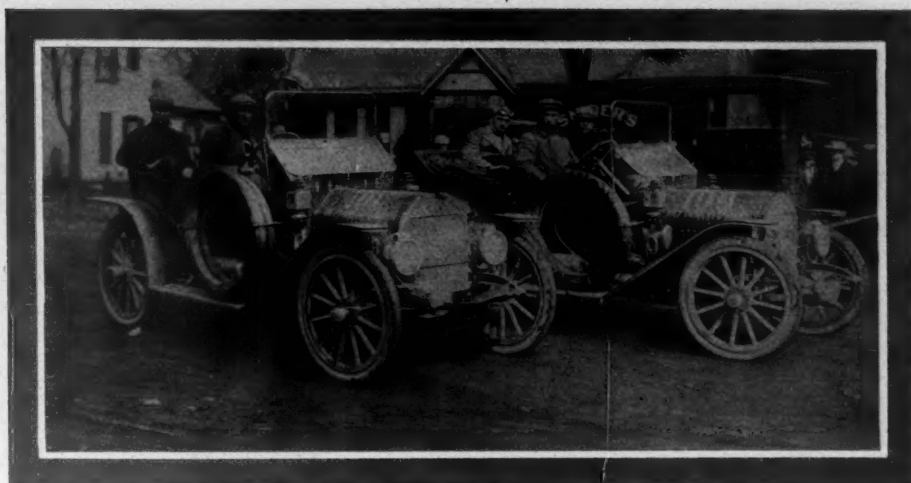
|                       |                |                    | 1st day | 2nd day | 3rd day | 4th day | 5th day | 6th day |      |      |      |      |
|-----------------------|----------------|--------------------|---------|---------|---------|---------|---------|---------|------|------|------|------|
| Touring Car Division— |                |                    |         |         |         |         |         |         |      |      |      |      |
| No.                   | Car.           | Driver.            | Time    | Work    | Time    | Work    | Time    | Work    | Time | Work | Time | Work |
| 2                     | Moline         | F. G. Salisbury    | 0       | 0       | 0       | 0       | 0       | 0       | 0    | 0    | 0    | 0    |
| 10                    | Staver         | E. T. Knudson      | 0       | 0       | 0       | 0       | 0       | 0       | 0    | 0    | 0    | 0    |
| 1                     | Moline         | C. H. Van Dervoort | 0       | 0       | 0       | 0       | 0       | 0       | 0    | 0    | 0    | 0    |
| 5                     | Halladay       | Geo. H. Daubner    | 0       | 0       | 0       | 0       | 0       | 0       | 0    | 0    | 0    | 0    |
| 3                     | Case           | J. Hanson          | 0       | 0       | 0       | 0       | 0       | 0       | 0    | 0    | 0    | 0    |
| 9                     | Staver         | G. Monckmeier      | 0       | 0       | 0       | 0       | 7       | 0       | 0    | 5    | 0    | 0    |
| 6                     | Halladay       | W. M. David        | 0       | 0       | 0       | 0       | 0       | 14      | 0    | 0    | 0    | 0    |
| 7                     | Oldsmobile     | C. R. Winters      | 0       | 0       | 0       | 0       | 238     | 217     | 0    | 2    | 0    | 0    |
| 8                     | Abbott-Detroit | A. M. Robbins      | 0       | 0       | 0       | 0       | 0       | 0       | 0    | 0    | 48   | 70   |
| Roadster Division—    |                |                    |         |         |         |         |         |         |      |      |      |      |
| 100                   | Moline         | J. A. Wicke        | 0       | 0       | 0       | 0       | 0       | 0       | 0    | 0    | 0    | 0    |
| 102                   | Oakland        | H. A. Bauer        | 0       | 0       | 0       | 0       | 0       | 0       | 0    | 0    | 0    | 0    |
| 105                   | Bergdoll       | Ad. Mensen         | 0       | 0       | 0       | 0       | 0       | 0       | 0    | 0    | 0    | 0    |
| 103                   | Velie          | A. H. Gibbons      | 0       | 0       | 0       | 0       | 0       | 0       | 0    | 0    | 0    | 0    |
| 104                   | Velie          | J. H. Stickney     | 0       | 0       | 0       | 0       | 0       | 1       | 0    | 0    | 0    | 0    |
| 101                   | Moline         | W. J. Boone        | 0       | 0       | 0       | 0       | 0       | 0       | 0    | 0    | 0    | 0    |
| 107                   | Grout          | H. E. Halbert      | 0       | 0       | 0       | 2       | 40      | 92      | 248  | 0    | 50   | 0    |
| 106                   | National       | Paul Strauss       | 0       | 3       | 14      | 13      | 0       | 0       | 0    | 0    | 11   | 0    |



thing of which the entire motor industry may be proud. Most of the penalties were brought about by spring troubles and in two instances the elimination can be traced entirely to accidents. The Oldsmobile Autocrat was running perfectly until a gasoline connection sprung a leak going into Washington Court House last Tuesday. This necessitated taking off the body to repair the damage, which of course meant a big time penalty. Then, to add to the misery, the big car, while leaving Washington Court House, skidded passing a team and dropped partly into a ditch, getting in a position where it could not secure traction, which made it necessary to get a team to climb out. This brought on the bulk of the penalties.

## Case Has Hard Luck

With the Case, it was running perfectly until it was leaving Detroit. Avoiding a woman getting off a street car, the car hit a curb which resulted in penalizations that put it out of the running. The big Abbott-Detroit can trace its fall to a spring breaking while inside the city limits of Cincinnati. Dan Boone probably would have gone clean with his Moline



MOLINE ROADSTER ENTRY

*J. A. Wicke in No. 100 Moline won the second leg on the Van Sicklen cup; No. 101 Moline, Boone driver, had a perfect road score*

had it not been for a weak dry cell which made trouble for him while starting on Wednesday. Boone cranked so hard he broke the starting crank bracket.

Another source of trouble was caused by broken fender irons, several being

penalized for loose fenders and broken brackets. It is figured that some make mistakes by drilling holes in the fender irons which weaken those parts and cause breaks. Instead of drilling holes, it is suggested that if the irons were clamped to the brackets that they would resist the jars and strains of a long run like this.

Brakes also caught some, but it is a remarkable fact that the report shows that on every car so penalized that one of the brakes was working well. Six caught demerits here.

## Engines Stand the Strain

Turning to the other side of the picture, one finds that not a single case of engine trouble developed among the seventeen cars on the 1,355-mile journey. Every engine was hitting on all four cylinders in the motor test Saturday morning, despite the severity of the run. The National was penalized for carburetor adjustments and perhaps some might claim this to be engine trouble, but here there are extenuating circumstances. Strauss, driver of the National, is the owner of the car and this was his first contest. In starting from Chicago he discovered the carburetor was not set for those conditions and he had to change it three times that



## VELIES IN ROADSTER CLASS

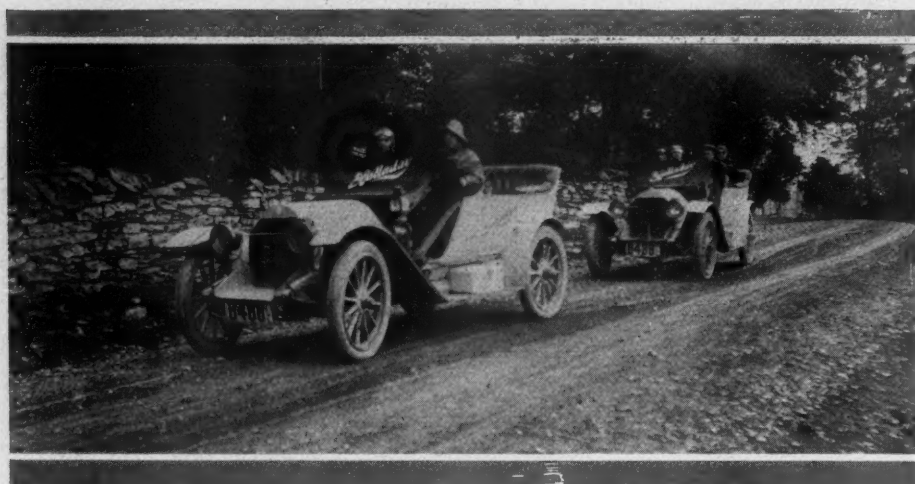
No. 104 Vellie had a perfect road score, while 105 only had 1 point against it and that for a tri-  
ing adjustment

**MOTOR CLUB, OCTOBER 27 TO NOVEMBER 3, 1911**

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BAUER'S OAKLAND

No. 102 Oakland made a perfect road score, and tied for second in roadster class.



#### THE HALLADAY TOURING CARS

No. 5 Halladay, driven by George Daubner, was one of the few with a perfect road score; No. 6 Halladay only had a few points against it

the hand brake. The net result shows a morning before the engine was running to his satisfaction.

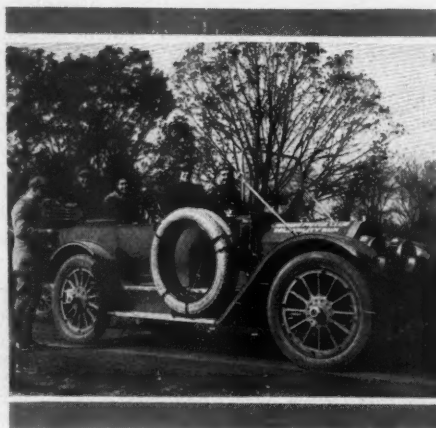
#### No Axle Trouble Reported

Not a case of axle trouble was reported. Before the run started the technical committee examined each car, taking the measurements from the felloe of the front wheel to the felloe of the rear one at the ground and allowing  $\frac{1}{4}$ -inch variation. Looking over the axles at the finish of the run it was found that each trimmed to a sixteenth of an inch. No case of a broken wheel was reported, whereas in previous tests it was discovered that there were weaknesses here. No leaks in radiator construction were unearthed, the penalization handed Wicke being for a leaky connection. This also is taken as a sign that radiator makers have studied the results of reliability tests and have profited accordingly.

As for the drivers, there cannot be a word of criticism passed. All through the tour there wasn't a case of a pilot beating it. Each and every one seemed to realize that the test was a serious proposition and each drove carefully. Perhaps in driving from Corinth to Cincinnati over the winding road that crosses the railroad track thirty-seven times, some of the drivers went a bit too fast and had to use their brakes so much that they were weakened so they drew penalizations Saturday, but in the main the driving was good.

#### All Kinds of Weather

If the Chicago Motor Club had tried to order varying weather and road conditions in order to give the cars a test that would include everything in these categories it could not have succeeded better. The contestants had every brand. The roads were fine in some places, good in others and rotten at the end. There were smooth stretches and hilly ones, while the weather varied from spring weather to winter, with an accompaniment of snow. As far as Indianapolis the weather was balmy



NO. 7—OLDSMOBILE



NO. 8—ABBOTT-DETROIT



NO. 106—NATIONAL

and the roads good. Then it sprinkled from Indianapolis to Louisville, although the stone roads were so good it made little difference. Going from Cincinnati to Columbus the roads were heavy because of rain and the weather cold and disagreeable. From Columbus to Detroit there was a stretch of road that should make the states of Ohio and Michigan ashamed of themselves. From Toledo to Detroit the going was so abominable that it was necessary to change the routing and even the roads selected were far from good.

#### Find Snow in Michigan

From Detroit to Grand Rapids the weather was cold and the skies cloudy. The roads, too, were not of the kind found in southern Indiana and Kentucky, but still not so bad as to worry anyone. It was on the final day of the tour that the prize package was delivered. Leaving Grand Rapids under a cloudless sky but with the temperature so far down that the tourists were in danger of being frost-bitten, the tour had not gotten more than 20 miles out of town than traces of snow were discovered. The farther the tour progressed the deeper became the snow until the climax was reached at Niles, Mich., where an 18-inch snowfall was discovered. The ruts were hidden and the snow so deep that most of the cars found it hard to maintain their schedules. In fact, the conditions somewhat resembled those that attended the running of the New York-Paris race. This snow belt, however, disappeared in the afternoon and the last traces were lost at New Carlisle, 45 miles from Chicago. From that point into Chicago the cars were kicking up dust and the weather had moderated so that the trip really was enjoyable. It was hard getting into the city because south of Gary the old Hobart road was torn up, making a detour necessary, while the usual course from Gary into East Chicago was blocked.

The tour from Columbus, Wednesday morning, to Chicago, Friday night, saw the elimination of only two of the cars that had perfect scores up to that point, and those two dropped out the same day, Thursday, going from Detroit to Grand Rapids. The Abbott-Detroit lost out when a gasoline line clogged and on top of this came the spring trouble which had started in Cincinnati. The Case was put out in Detroit, when it encountered the street car incident. On Wednesday the No. 9 Staver and No. 7 Oldsmobile were penalized 5 and 2 points respectively; on Thursday the Case drew 4 points, the Abbott-Detroit 118, the Grout 53 and the National 11. On the last day the Oldsmobile drew 6 more points and the Grout 38, while the Abbott-Detroit and the National withdrew.

#### Work of Official Cars

It would not do to pass over the work of the official cars and the thorough organization of the tour itself. The pilot car was a Halladay, which car laid out



the route originally and which carried Chris Cox, of the Automobile Blue Book staff. The Halladay always was off an hour ahead of the tour itself and throughout the journey the tourists found the course perfectly marked. An innovation was the placing of paper arrows on every turn, so the drivers had three sources of information—the route book, the confetti and the arrows.

In addition to having two cars in the competition itself, the Velie Chicago branch also furnished a car as pacemaker and which also carried the referee. Except for several cases of tire trouble, the Velie was on the job from start to finish. There also were two Midlands that were used as official cars, one carrying General Executive Frank Wood and the other starting out with the chief checker, R. E. Greene. A National touring car driven by Donald Herr, winner of the Illinois cup at Elgin, not only served as a press car for the Chicago newspaper men, but also was used by Starter De Long.

The Chicago Motor Club sent Assistant Secretary Wilson ahead by train to the night controls to see there wasn't a hitch in the garage or hotel arrangements. As each man entered the hotel at night he was handed an envelope giving him his room assignment, and there wasn't a minute lost in getting to the room. Each morning also breakfast was awaiting the tourists at 5 o'clock and from start to finish there wasn't a hitch. Stopping in big cities each night proved an agreeable feature because of the fine hotel accommodations that were enjoyed.

#### Story of Brake Test

The results of the brake tests show that brakes are being greatly improved from year to year. Of the fifteen cars that took the brake tests only six received penalties for not being able to stop the car within 50 feet when traveling at 20 miles per hour with the exception of three cars in the runabout division that traveled at 18 miles per hour, these being Nos. 100, 101 and 102, two Molines and the Oakland. The figures in the complete table give the distances in feet required by each car, for the foot brake, used alone, and also for the hand brake when used alone. A car stopping in 50 feet or under was not penalized, but those requiring greater distance were penalized a point a foot for every foot above the 50 limit. Of the six penalized all had one good set of brakes and then one poor set. One car stopped in the remarkably short distance of 22 feet with the emergency brake, but needed 555 feet with the foot brake. Halladay No. 5 carried off the record for the shortest stop, 22 feet, as stated. The next low mark was 23 feet by No. 100 Moline at 18 miles per hour. The Oldsmobile, the heaviest car in the run, made a remarkable brake stop of 27 feet on the foot brake and 35 feet with the emergency or hand brake. No. 10 Staver stopped in 33 feet with each set of brakes; No. 101



#### CASE AND BERGDOLL

No. 3 Case did well on road, while No. 105 Bergdoll, perfect road score, tied Oakland for second place

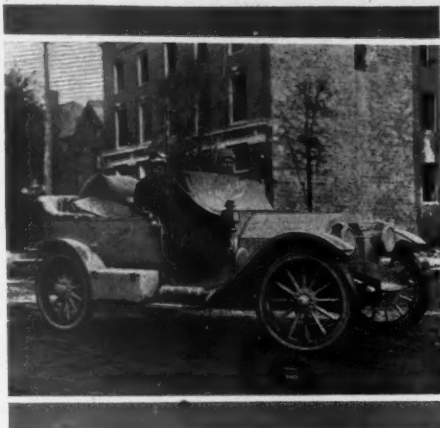
Moline stopped in 31 feet with the foot and 30 feet with the hand.

In these brake tests a pacing car was used so that each car traveled at the correct pace. When the brakes were applied some of the cars skidded both wheels, some skidded only one wheel and in some cases neither wheel skidded. An interesting example was No. 10 Staver, which did not skid either wheels when using the foot brake and yet stopped in 33 feet. It certainly was much easier on tires in this case than where both wheels were immediately locked and skidded along. It was the general opinion among the drivers that best results were obtained by letting the brakes on and off during the test. If when first applied they skid the wheels, if released for a moment the wheel starts turning, but is again locked or slowed down, the car will stop more quickly. It is a certainty that a skidding wheel is not so good as one that slows down very gradually without any skidding.

#### Brakes Adjusted Once

During the test one adjustment of brakes was allowed. It took place at Washington Court House, O., when the run was exactly half over. The second half of the run was much harder on brakes than the first half, due to the very rough roads, many of the rough approaches to bridges and the sudden ruts and holes.

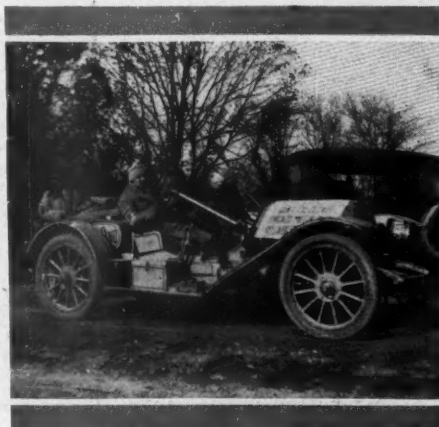
On the Glidden tour of last year the brakes were given a similar test at the end of the run in Chicago and not a single touring car was able to stop within the 50-foot limit. A Chalmers and a Maxwell stopped under the 50 feet with the foot brakes, but went over when the hand brakes were used. All the rest of the contestants went over the limit on both sets. One car required 192 feet to stop with, others 123 and others around the 100-foot mark. In the runabout division better results followed: Of the five that ended the run three had two sets of brakes each that stopped under the 50-foot mark; one of the others went 1 foot over on the hand brake and the other 133 feet over on



THE HALLADAY PILOT CAR



THE VELIE PACEMAKER



MIDLAND, GENERAL EXECUTIVE'S CAR

## TIRE TROUBLES OF CHICAGO RELIABILITY

| Car No. | Name of Car    | Make of Tires Used       | Cases of Tire Trouble Each Day. |     |     |     |     |     |     |
|---------|----------------|--------------------------|---------------------------------|-----|-----|-----|-----|-----|-----|
|         |                |                          | 1st                             | 2nd | 3rd | 4th | 5th | 6th | 7th |
| 2—      | Moline         | Goodrich                 | 0                               | 0   | 0   | 0   | 0   | 0   | 1   |
| 10—     | Staver         | Michellin                | 0                               | 0   | 1   | 0   | 0   | 1   | 0   |
| 1—      | Moline         | Goodrich                 | 0                               | 0   | 3   | 1   | 0   | 1   | 1   |
| 5—      | Halladay       | Republic                 | 1                               | 0   | 1   | 0   | 0   | 0   | 1   |
| 3—      | Case           | Goodyear                 | 0                               | 0   | 0   | 0   | 1   | 1   | 0   |
| 9—      | Staver         | Michellin                | 1                               | 0   | 0   | 0   | 0   | 2   | 0   |
| 6—      | Halladay       | Goodyear                 | 0                               | 0   | 0   | 0   | 0   | 0   | 1   |
| 7—      | Oldsmobile     | Firestone                | 0                               | 0   | 0   | 0   | 0   | 0   | 2   |
| 8—      | Abbott-Detroit | Goodyear                 | 2                               | 0   | 2   | 0   | 0   | 0   | 0   |
| 100—    | Moline         | Goodrich                 | 0                               | 2   | 1   | 0   | 0   | 0   | 2   |
| 102—    | Oakland        | Goodyear                 | 0                               | 0   | 1   | 0   | 0   | 1   | 0   |
| 105—    | Bergdoll       | Kelley-Springfield       | 0                               | 0   | 0   | 2   | 0   | 0   | 0   |
| 103—    | Velle          | Morgan & Wright          |                                 |     |     |     |     |     |     |
|         |                | Firestone, front wheels. | 0                               | 1   | 0   | 0   | 0   | 1   | 0   |
|         |                | Firestone, rear wheels.  |                                 |     |     |     |     |     |     |
|         |                | Hartford, front wheels.  | 0                               | 0   | 1   | 0   | 0   | 0   | 2   |
| 101—    | Moline         | Goodrich                 | 0                               | 0   | 0   | 0   | 0   | 1   | 3   |
| 107—    | Grout          | Diamond                  | 0                               | 0   | 1   | 0   | 1   | 0   | 1   |
| 106—    | National       | Michellin                | 1                               | 0   | 0   | 0   | 0   | 0   | 0   |

the hand brake. The net result shows a brake improvement that is commendable.

## Tire Troubles on Tour

As is shown in the accompanying table, of the seventeen cars entered in the Chicago Motor Club's reliability run, three, the No. 2 Moline, No. 6 Halladay and Oldsmobile, managed to go through without tire trouble up to the last day; then even the perfect tire scores of these were shattered. It must be mentioned, however, that almost every kind of road surface imaginable was negotiated, especially on the last day. There were 200 or 300 miles of the 1,355 paved with brick or asphalt, 400 or 500 miles or more of it was good dirt and gravel road

and quite smooth and free from bumps and holes, whilst the rest was rough, muddy or sandy. The stone roads of Kentucky were for the most part smooth but very hilly and crooked and with several streams crossing them that had to be forded; the latter proved to be hard on the tires. Ohio's roads were comparatively good but for the exceptions of about 100 miles of bad stretches. The really bad roads were encountered on entering the state of Michigan. They were alternately rough, sandy and muddy with occasionally a 10-mile stretch of good smooth road that was to aching arms of the driver's, like unto an oasis in a desert to its weary travelers.

## Detroit Makers in an Optimistic Mood

### Satisfactory Business During Month of October Leads to Predictions That 1912 Will Be Successful Year—Hugh Chalmers Declares New Sales Record Will Be Set Next Season

**D**ETROIT, Mich., Nov. 6.—Following a most satisfactory October, the month of November has come in full of promise for the local motor industry. Some of the manufacturers are already beginning to predict that 1912 will be the greatest year in the history of the business, in spite of the presidential election and the busi-

ness disturbance that almost inevitably accompanies such an event.

Hugh Chalmers, president of the Chalmers Motor Co., in a talk before the men in attendance at the Chalmers technical convention last week, expressed the belief that 1912 would set a new record for sales of motor cars. At any rate, he was confi-

dent that it would be the greatest Chalmers year. Two seasons' records were established by the Chalmers' plant last week. The shipments for the week were the largest of any week of the season to date and the company broke the season's record for a single day's shipment—Thursday—when it sent out thirty-nine of the new model 36's in addition to the regular daily consignment of 40's. For the first 4 months of the 1912 season, the company's shipments show an increase of 35.3 per cent over the same period last year. The factory is being operated up to its full capacity, working both day and night shifts. The Chalmers technical convention will end this week.

The Ford Motor Co. reports that it manufactured and sold nearly 4,000 cars during the month of October. The output will be greatly increased, it is expected, when the new addition, now rapidly nearing completion, is put in operation early in December. The company is hopeful of breaking even the splendid record of last May, when 6,013 cars were shipped, before the winter is over.

That the other Detroit makers are sharing in this prosperity is shown by the extensive building operations under way. Mention has been made previously of several of the new plants and additions under construction, but of the building of motor car factories there seems to be no end, in this city at least. Work has been begun on a new garage for the Hupp Corporation, at Jefferson avenue and Gilbert street, in the Fairview district, just two blocks from the company's plant. The building will be ready for occupancy about January 1. It will be used for displaying and storing R. C. H. cars. The garage will be 62 by 125 feet and will be a very ornamental structure.

A tract of land comprising 100 acres at Woodward avenue and the Nine-Mile road has just been purchased by Walter C. Piper, and it is understood that half of the property will be used as a site for a monster motor car plant, the remainder being sub-divided into lots for the employees.



CITIZENS OF HOLDREDGE, NEB., WORKING ON THE ROADS





GROUP OF CITIZENS OF HOLDREDGE, NEB., WHO HELPED BUILD A ROAD

It is not known, as yet, what company intends building here. The price paid for the land was about \$85,000.

The Detroit Bi-Car Co. has been organized with a capital of \$100,000, to manufacture the Bi-Car, which is described as a motor cycle embodying some of the features of a motor car. It is driven by a four-cylinder four-cycle engine, started by a crank at the side. It has two speeds, operated by a regular shaft drive. It is claimed for the Bi-Car that it has greater stability than the ordinary motor cycle from the fact that the center of gravity is below the center line of the wheels. The company has established a temporary factory at Greenwood and Baltimore avenues, but plans to build later. The officers are: President, John J. Chapin, who also is the inventor of the machine; vice-president, Alfred Roseroot; secretary, John J. Berkery; treasurer, Frank J. Gorman.

The Warren Motor Car Co. has on exhibition at its branch, 736-740 Woodward avenue, the first of its new model 12-30 K cars. It is a 30-horsepower five-passenger touring car, fully equipped, the equipment including a self-starting device without springs, cams or electrical contrivances, on which the company's engineers have been at work for several months.

The Phipps-Grinnell Electric Co., manufacturer of the Phipps-Grinnell electric car, suffered a \$25,000 loss by fire at its plant on Atwater street early Tuesday morning. The damage is covered by insurance. While the fire was confined to the upper portion of the building, the entire four floors were flooded and the plant put out of commission for the time being. About fifty-five men are employed. Defective wiring is blamed for the fire.

The Metzger Motor Car Co., which has been operating as a New York corporation, has filed articles of incorporation at Lansing. The capital stock is \$1,000,000, and the stockholders are: B. F. Everitt, Detroit, 1,808 shares; Walter Githens, Chicago, 3,040 shares; Edward R. Hewitt, New York, 716 shares; Harriet G. Youngblood, Detroit, 2,342 shares. The new corporation takes over the Metzger plant.

## Nebraskans Build Road of Their Own

### Citizens of Holdredge, Not Having Much Money in County Treasury, Donate Their Services and Construct Mile Highway—Chicken Dinner At Finish Rewards the Weary Workers

HOLDREDGE, Neb., Nov. 3—Anticipations of a big chicken dinner, and interest in good roads in general and the south Platte route through Nebraska in particular, resulted recently in the gathering of a good roads picnic of 200, in the hills of Harlan county, 20 miles southwest of Holdredge. But only the workers got any of the fried chicken, for this picnic had a purpose. It was called with the object of straightening a 9-mile stretch of road on this southern route through the state.

For some time there has been doubt as to the selection of the route for this highway, from Atlanta, west of Holdredge, to Oxford. For years an east and west road through this section was deemed impracticable on account of the steep grades. This was the most serious obstacle on the whole route.

Not long ago a meeting was called at Oxford of representatives of Holdredge, Atlanta and Oxford, to solve if possible the difficulty. After deliberating some time over the routes, it was decided that the only way was to cut down the steep grades. To hire this amount of work done would have been too much for the three counties, so it was decided to call for volunteers.

Big posters were gotten out announcing a good roads picnic with chicken dinner. The people responded, and for 2 days 200 men and women assembled and were occupied in this big task of improving the roads. Steam graders were taken from Holdredge and the farmers brought their teams, the commercial clubs of the towns furnishing the supplies.

The work accomplished along Spring creek was remarkable. In the 2 days' time grades were leveled, culverts and

bridges were constructed, and an entire new mile of road was built over land hitherto covered with brush and buffalo grass.

While the road has not been put in perfect condition, nevertheless a big start has been made, and an interest aroused which it is believed will mean that the Spring creek road will be in model condition by next summer. Funds are now available for the completion of the work.

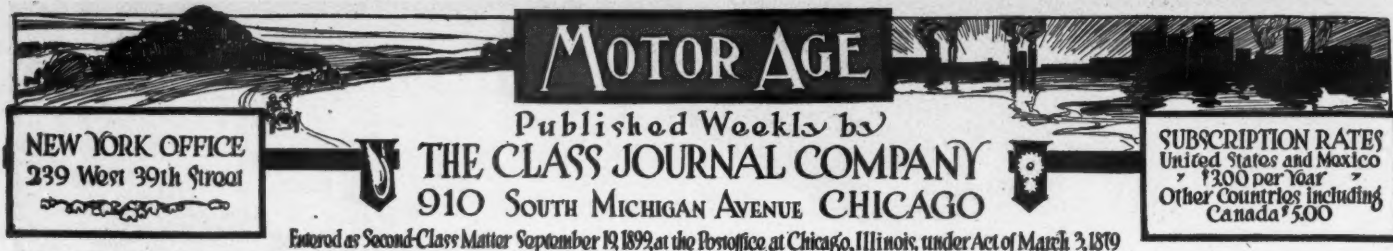
The mayor of Holdredge and prominent men of all of the towns took part in this work.

### OHIOANS TALK ROADS

Columbus, O., Nov. 5—A meeting of the executive committee of the Ohio Good Roads Federation and the good roads committee of the Ohio State Automobile Association was held November 1 at the Chittenden hotel, to take up questions of concerted action in good roads agitation. The joint committees adopted a resolution asking that candidates for delegates to the Ohio constitutional convention pledge themselves for a bond issue of \$50,000,000 for the building of good roads.

The meeting went on record as favoring the Lincoln memorial highway, which is to be constructed with federal aid. Resolutions were adopted urging all motorists in the state to unite in aiding the roads movement.

Commending three counties in the state, Franklin, Cuyahoga and Hamilton, for work done for better highways, the resolutions asked that the constitutional convention so amend our state constitution that bonds may be issued for the construction of an inter-county system of highways, believing that roads properly constructed are a permanent improvement and a benefit to future generations.



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# MOTOR AGE

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## Chassis Improvements at Olympia

FROM preliminary reports of the motor car industry in England and France, as published in this week's issue, it is apparent that the foreigner has had a very busy year, particularly in the engineering departments. In a word, the 1912 models are very different from the 1911 ones. The trend of development is towards smaller motors, motors of greater flexibility and motors of higher efficiency. The long-stroke motor has arrived in earnest. Of over a score of firms that have brought out new models, each one has jumped into the long-stroke band wagon, there only being one case of a new model in which the bore is the same as the stroke, giving what is known as the square motor. The ratio of bore to stroke is, on the average, 1.5 to 1; that is, the stroke is half as long again as the bore. The foreigner has gone to the long-stroke motor because he can obtain more horsepower for a given amount of gasoline consumed than he can from the square or short-stroke types. Gasoline is a big factor in Paris and London, and it is natural that the cost of fuel would be a determining factor in the design of a motor. But the tax on horsepower is also a factor. The tax for running a car in England is at a certain rate per horsepower, the horsepower taking into account only the bore of the cylinder and not the stroke, so that with the long-stroke motor it is possible to get much more power than formerly and yet have a motor of no higher horsepower rating; in fact, the reverse is true, and many makers for next year have actually cut down the cylinder bore and added to the stroke, and are gaining as much as 12 horsepower in the motor and yet have a lower horsepower rating, thus accomplishing the desired end of reducing the horsepower tax per motor and increasing the power output. What could be more desired, when taken in connection with the higher power output for fuel consumed, particularly when there is a government fuel tax in Great Britain?

ANOTHER great 1912 trend in motors is the reduction of noise. This is being accomplished in two ways, one by engineering methods, the other by what might be called subterfuge. In the engineering methods is noted the introduction of silent chains to drive the camshafts, to drive the magneto shafts and to drive the pumpshafts. These chains are much quieter than gears and give entire satisfaction. Many of the makers of poppet-valve motors have entirely discarded the spur gear method of drive and are using the silent chain on every one of their models for both touring and commercial car fields. The variety of methods of driving by chain is well illustrated on another page of this issue, in which nearly a score of different arrangements are shown. There are other engineering methods by which motor noise is being reduced. One is the more accurate workmanship employed. The clearance spaces between pistons and cylinders have been gone into with the object of eliminating piston slap, which is one of the great bugbears of the present gasoline motor. Some makers have been experimenting with what is known as the shrouded piston, a piston with a triangular slit in that part beneath the wrist pin, the slit allowing the lower part of the piston to spring outwards against the cylinder wall, and so form a snug fit without any danger of scouring, and yet preventing the undesirable slap. Others, using engineering methods, have greatly reduced the weight of the motor reciprocating parts. Steel pistons are being used by several firms in their smaller models. These pistons are stamp-

ings, very light and quite long. Other makers have adopted the hollow connecting rod. It is lighter and stronger, and being lighter reduces the sum total of vibration set up in the motor. Many others have made the perforated piston stock. Looking next at which might be termed the subterfuge methods of reducing noise in the motors, the matter of housing valve springs and upper ends of valve tappets cannot be overlooked. In many cases the heavy aluminum cover plates have been added solely to muffle the noise, the same as a muffler is used to deaden the explosions of the motor. Muffling in this way does not add one day of useful life to the motor. The vibration, which really causes the noise and wears out the motor parts, still continues. The motor is quieter but no better, no more efficient and will not endure any longer. There are some makers, however, who have adopted the plates for caging in the valve springs and tappets, but who have also worked along engineering lines to reduce the noise. The amount of space between the bottom ends of the valve stems and the tops of the valve lifter rods or tappets has been reduced. In some fiber packing has been introduced.

THE sleeve-valve motor is on stronger ground than a year ago. Last season an avalanche of different types of valves was shown at Olympia. Many of them were exhibited by promoters of patents. Not a few of them had never run a minute. Others had been given short trials. The general feeling then was one of wonder. Everybody wondered. Many wondered would the licensees of the Knight sleeve-valve type continue to use it; many wondered if the piston valve could be manufactured to give entire success; many wondered if the rotating type disk valve in the cylinder head would give satisfactory results; many wondered if the rotating-barrel valve along the side or top of the cylinder head would make good; and scores wondered if some happy combination of a reciprocating and rotating sleeve could not be devised to give good results. Since that period of wonder there has been time for reflection—good, sound business-sense reflection. The result is that many of the fantastic conceptions of a year ago have passed into merited oblivion; others have undergone the test of a year; and others have taken their places with some of the already accepted types. The net result is that the poppet-valve is more on the toboggan than ever. More concerns have taken up the Knight sleeve-valve type, more are today arranging to take it up, and more are opening negotiations for it. The new-valve era is at hand. Public sentiment is leaning towards it and the power of public sentiment is too strong to be stemmed by one or two makers of poppet valves, who imagine they can measure their strength with the entire industry. It is the same as the sentiment towards six-cylinder motors in America. It took the sentiment a long time to anchor itself in the hearts of the people, but once embedded there it immediately became a giant. So it is today in Europe with the sleeve-valve motor.

IN the chassis in general, no other trend is so conspicuous as the increase in the use of four-speed gearboxes. On small cars the four-speed gearset is now general. A few years ago it used two speeds ahead, then the jump was made to three, now it is four. This permits of the use of a smaller motor than could be employed with a three-speed set.



# Plans Are Made for Big Road Congress

**R**ICHMOND, VA., Nov. 4—The complete official program for the American Association for Highway Improvements annual congress in this city, November 20-23, is as follows:

## NATIONAL DAY, NOVEMBER 20

Morning session—Prayer by the bishop of Virginia; address by Governor William H. Mann, of Virginia; address of welcome by D. C. Richardson, mayor of Richmond; opening address by Logan Waller Page, president of the American Association for Highway Improvements; address by William Howard Taft, president of the United States; address by W. W. Finley, president of the Southern Railway Co.; address by J. Hampton Moore, of Philadelphia, president of the Atlantic Deeper Waterways Association.

Afternoon session—Addresses by Thomas S. Martin and Claude A. Swanson, United States senators from Virginia.

Evening—Smoker at the Jefferson hotel, arranged by the chamber of commerce and the city of Richmond.

## CONTRACTORS' DAY, NOVEMBER 21

Harold Parker, chairman; chairman's address by W. A. McLean, Toronto, Canada; address by P. St. Julien Wilson, state highway commissioner, of Virginia; address by J. B. Grand, territorial engineer of Arizona; address by W. W. Cosby, state highway engineer of Maryland; address by Arthur H. Blanchard, professor of highway engineering university, Columbian University.

Afternoon—Addresses by D. L. Hough, president United Engineering and Contracting Company; Mr. Bates and other contractors. Discussion, "The Relation of the Road Contractor to the Engineer."

Evening—Reception in governor's mansion to all delegates.

## ROAD USERS' DAY, NOVEMBER 22

Address of welcome on behalf of the motorists of Virginia, Preston Belvin, president of the Virginia Automobile Association; addresses by Hugh Chalmers, Detroit; Sidney S. Gorham, Chicago; Matthew S. Rogers, secretary state of Connecticut, "What It Has Done for Good Roads;" Colonel Charles Clifton, of Buffalo; Davis Becroft, Chicago; Henry Fairfax, Virginia; Edward Laszansky, secretary of the state of New York.

## ASSOCIATION DAY, NOVEMBER 23

Dr. Joseph Hyde Pratt, state geologist of North Carolina, presiding. Address on the use of convict labor in road building by Dr. Pratt. Discussion opened by S. W. McCallie, state geologist of Georgia. Other discussions of this session will be participated in by Jesse Taylor, secretary of the Ohio Good Roads Federation; W. D. Brown, editor Rural Free Delivery News; Leslie T. McCleary, of New York, representing the Lincoln Memorial Association; Dudley Field Malone, of the National Highways Protective Society, of New York; representatives of motoring associations, national civic federations, and representatives of farmers' and labor organizations.

The afternoon session will be devoted to the election of officers of the association; selection of place for next meeting, and the transaction of other business that may come before the body.

## OKLAHOMA ROAD PLANS

Oklahoma City, Okla., Nev. 5—Exceeding in value any similar amount, a bond issue of \$1,250,000 for good roads in Oklahoma county will be voted on at a special election which has been called by the county commissioners. This election will be held November 23 and is called in response to a petition presented to the commissioners. The petition contained 13,000 names and was the longest petition ever submitted in the history of Oklahoma county for any purpose. Oklahoma City is the county seat and pays more taxes than the rest of the county outside of the corporate limits but the petition was signed by town people with as much promptness as it was by farmers.

The plan for hard roads contemplated in the petition will include 136 miles of asphalt roads and 19 miles of crushed macadam. All of the four main roads will center at Oklahoma City. These four roads will reach the boundaries of the county and the adjoining counties have signified a willingness to proceed with similar work when this county has commenced grading these four highways. Laterals are contemplated to reach parts of the county that need better roads. If the bonds carry, work will commence at once and the inauguration of this work in the Oklahoma county, the richest in Oklahoma, will stimulate the building of roads throughout the state. The great interest which is being taken in good roads in this new state is an indication that the movement will not

cease until it be possible to cross the state in any direction with a motor car between the rising and the setting of the sun. As the eastern part of Oklahoma, formerly known as Indian territory, had no public roads of any kind prior to statehood in 1907, the field for constructing highways is one that staggers citizens of the state, but they have taken hold of the matter in a manner which insures success.

## ENGINEERS ANNOUNCE PROGRAM

New York, Nov. 8—The annual meeting of the Society Automobile Engineers will be held in this city on Thursday, Friday and Saturday, January 18, 19 and 20, which is during the week of the commercial vehicle division of the Board of Trade show at Madison Square garden. The sessions will be held in the assembly hall of the Garden theater. Many papers will be read on subjects bearing on standardization, on both pleasure and commercial car topics. The advance program given out by Coker F. Clarkson, general manager of the society, is as follows:

Papers will be read as follows: "Compound Gas Engines and Their Efficiency," by Eugene P. Batzell; "Present Status of Motor Car Lighting, Gas and Electric," by J. W. Esterline and A. E. Berdon; "Short and Long-Stroke Motors," by John Wilkinson; "Definitions in Connection with Physical Properties of Steel," by Henry Hess; "Mechanical Points in Connection with the Construction of Solid Motor Tires," by Charles B. Whittelsey; "Silent Chains," by Chester S. Ricker; "Automatic Spark Advance," by Lon R. Smith; "Balance of Motors," by Ernest R. Fried; "Effect of Use of Silicon in Steel," by Marcus T. Lothrop; "Trend of European Motor Car Design," by Charles Y. Knight; "The Necessity of Standard Gauges for Commercial Vehicles as Viewed from Railway and Other Engineering Practice," by Hermann F. Cuntz; "Multiple Disc Clutches," by Joseph A. Anglada.

The following standards committee divisions will have reports to present: Ball and roller bearings, David Fergusson, chairman; broaches division, C. E. Davis, chairman; carburetors division, G. G. Behn, chairman; frame sections division, J. G. Perrin, chairman; iron and steel division, Henry Souther, chairman; miscellaneous division, A. L. Riker, chairman; nomenclature division, H. E. Coffin, chairman; seamless steel tubes division, H. W. Alden, chairman; springs division, A. C. Bergmann, chairman; truck standards division, W. P. Kennedy, chairman.

Subjects—Standard gauge for pleasure and commercial vehicles, electric lighting outfits, magneto dimensions, spark plug thread tolerance, vehicle taxation formula, metal gauges, oversize standards for pistons, bushed yoke and eye rod ends, limits for S. A. E. screw threads.

There probably will be additional papers on the following subjects: "Self-starters for Gasoline Motors," "Underslung Frames," "Position of Brakes," "Wheel vs. Propeller Shafts and Front-Wheel Position of Transmission, on Rear Axle or in Front of Propeller Shaft," "Standardization of Drawings," "Disintegration of Fuel Particles and Homogenous Carbureting of Air."

Commercial vehicles papers—"The Application of Artillery Assembling Practice to Commercial Motor Cars," "Design for Station Operation," "Advantages and Disadvantages of Large Driving Wheels," "The Status in Europe of the Electric Vehicle for Municipal Emergency Service," "Increasing the Utility of Commercial Cars by Auxiliary Loading and Unloading Devices," "General Problem of City Freight Transportation."



November 9-11—Track meet, San Antonio Automobile Club.

November 20-24—First American road congress at Richmond, Va., under auspices of American Association for Highway Improvement.

November 20-25—Fall show at Indianapolis. November 22—Road users day, American Road Congress, Richmond, Va., under direction of Touring Club of America.

November 22—Start of 11-day around-Georgia tour.

\*November 27—Vanderbilt road race, Savannah, Ga.

November 30—Grand Prix race, Savannah, Ga.

January 6-13—Twelfth annual show, pleasure car division, Automobile Board of Trade, Madison Square garden, New York.

January 6-20—Madison Square Garden show, New York City, Automobile Board of Trade.

January 10-17—Annual show, Motor and Accessories Manufacturers, Madison Square garden, New York.

January 10-17—Annual show, National Association of Automobile Manufacturers, Grand Central palace, New York.

January 13-19—Milwaukee show.

January 13-27—Show of Philadelphia Automobile Trade Association.

January 15-20—Twelfth annual show, commercial division, Automobile Board of Trade, Madison Square garden, New York.

January 18-20—Annual meeting Society of Automobile Engineers, New York.

January 22-27—Show at Providence, R. I.

January 22-27—Show at Detroit, Mich.

January 27-February 10—Eleventh annual show under the auspices of the National Association of Automobile Manufacturers, Coliseum, Chicago.

February 5-10—Annual show, Pleasure Car Exhibit, St. Louis.

February 5-17—Show at St. Louis.

February 12-17—Annual show, Commercial Car Exhibit, St. Louis.

February 12-17—Show at Kansas City, Mo.

February 14-17—Show at Grand Rapids, Mich.

February 17-24—Show at Newark, N. J.

February 17-24—Minneapolis show.

February 19-24—Show at Hartford, Conn.

March 2-9—Pleasure car show, Boston.

March 4-9—Show at Denver, Colo.

March 13-20—Show of Boston Commercial Motor Vehicle Dealers' Association, Mechanics' building, Boston.

\* Sanctioned



# Herrick in National Wins Desert Race

World's Record Holder, First in Los Angeles-Phoenix Grind Last Year, Again Captures the Honors in Long Plug—Hamlin in Franklin Runner-Up, With Midland Third and Buick Fourth—Details of Struggle

PHOENIX, ARIZ., Nov. 7.—Special telegram—For the first time in the history of motor racing, an event of national importance has been won 2 years by the same men. Harvey Herrick, who won the Los Angeles-Phoenix road race a year ago in a Kisselkar, this year piloted a National to victory, while Ralph Hamlin, second last year in the Franklin, used the same machine and took the same position—second. Herrick's running time over the 542-mile course was 20 hours 22 minutes, while that of Hamlin's was 22 hours 54 minutes 35 seconds. The Midland car, driven by Tom Carrigan, captured third honors, negotiating the distance in 24 hours 21 minutes and 24 seconds. A Buick was fourth in 26 hours 26 minutes 35 seconds. All of the sixteen entries started as follows:

| No. | Car             | Piston Displacement | Driver            |
|-----|-----------------|---------------------|-------------------|
| 1   | Maxwell         | 229                 | Clarence Smith    |
| 2   | Pope-Hartford   | 299.4               | W. D. Tremaine    |
| 3   | Franklin        | 301.5               | Ralph Hamlin      |
| 4   | Stoddard-Dayton | 550                 | E. Rogers Stearns |
| 5   | Cadillac        | 286                 | W. W. Bramlette   |
| 6   | E-M-F           | 226.2               | W. La Casse       |
| 7   | Flanders        | 154.8               | Geo. Soules       |
| 8   | Cole            | 286                 | John Jenkins      |
| 9   | Mercer          | 286                 | H. Hanshue        |
| 10  | Case            | 236                 | W. F. Brong       |
| 11  | National        | 448                 | Harvey Herrick    |
| 12  | Buick           | 318                 | L. Nikrent        |
| 13  | Fiat            | 618                 | Teddy Tetzlaff    |
| 14  | Midland         | 318                 | T. Carrigan       |
| 15  | Lexington       | 280.6               | C. Bigelow        |
| 16  | Buick           | 318                 | J. Ferguson       |

The course is a trying one and tested the mettle of men and cars to the utmost. Cars and drivers were covered with thick coats of dust upon their arrival. Several had no sleep from Saturday morning till late Monday night. For days before the start of the race, Saturday night, there had been no rain and the course was in as good condition as it ever was, but at its best it is terrifying. There are stretches of 50 miles without water or human habitation.

## Herrick Never Headed

Herrick took the lead right at the start and maintained it to the end. He could have finished an hour sooner. Herrick's proverbial luck and the National's staying qualities carried them into San Diego for the special prize of \$1,000 for the first car to reach that place, far in advance of the others. Then Herrick was off over the sands of southern California, across the brush-covered flats of Mexico, to Yuma, Ariz., where he won another \$1,000. He pulled into Yuma, 330 miles from Los Angeles, at 11:49 Sunday morning. His running time had been 12:14:00.

Leaving Yuma at 5:03 the next morning the National shot away for Dome, 20 miles distant. He went into control only a minute ahead of the Mercer. This was the nearest Herrick came to losing his lead.

## DESERT ROAD RACE RESULTS

| Pos. | Car and Driver    | Time     | M.P.H. |
|------|-------------------|----------|--------|
| 1    | National, Herrick | 20:22:00 | 26.6   |
| 2    | Franklin, Hamlin  | 22:54:35 | 23.6   |
| 3    | Midland, Carrigan | 24:21:24 | 22.1   |
| 4    | Buick             | 26:26:35 | 19.4   |

All the cars were held in control at Dome until they could be hauled across the Gila river. The Franklin and Mercer pressed the National closely this side of the river, but gradually Herrick pulled away. The last 150 miles was easy for him. He did not let out the National at all. Once E. Swanson, his mechanic, was jolted out, but Herrick playfully ran on half a mile, forcing Swanson to scamper along to keep up.

## National the Winner

At 1:51½ Monday afternoon the National crossed the line at the Arizona fair grounds. Herrick, who was born and reared in Phoenix, received the plaudits of 7,000 people.

The Franklin arrived at 2:35. Hamlin drove a splendid race and but for an unfortunate accident on the California desert might have beaten Herrick. The Franklin broke a spring near El Centro and Hamlin spent over an hour in a blacksmith shop.

Tom Carrigan took third place with the Midland, a dark horse, because he had better luck than drivers of heavier and faster cars. He had practically no trouble along the route.

A protest which may prevent the Mid-

land being formally awarded third money has been filed with the A. A. A. representative by Louis Nikrent, driver of the Buick No. 12. Nikrent was getting along pretty well until he was this side of Yuma, when part of the Buick's machinery began to give trouble. He decided that he had no chance to win with his car, so when No. 16 Buick, driven by Ferguson, of Bisbee, Ariz., came along, he took its wheel. Ferguson's mechanic, Carey King, was left to help Nikrent's mechanic get the supposedly disabled car into Phoenix, but the mechanics beat their drivers. They claim that they arrived at 5:03 but found no one to check them in. They were put down as arriving at 5:16. If the protest of Nikrent is allowed, No. 16 will be given third honors. It is claimed that since Nikrent deserted his own car it was disqualified. No. 16 Buick was checked in fourth by the local officials, its running time being 26 hours 26 minutes 35 seconds.

The most serious accident of the race occurred to the Fiat. A mile east of San Diego the lights went out and the car crashed into a telegraph pole. Teddy Tetzlaff, the driver, was hurt, while Felix Magone, his mechanic, was seriously injured. Both are in the hospital at San Diego. The Fiat is junk.

Earl Fancher, mechanic to Earl Smith, the Maxwell driver, also is in a San Diego hospital. Twice between Los Angeles and San Diego the Maxwell turned over. Just out of San Diego it turned over a third time, Smith and Fancher being pinned underneath. Roger Stearns, driving the Stoddard-Dayton,



HOME STRETCH OF SAVANNAH ROAD RACE COURSE AS IT LOOKS NOW



stopped to give assistance and lost his chance of beating the National into Yuma. Smith was able to finish the race with another mechanic.

At Santa Ana the Pope-Hartford, a Phoenix car driven by W. D. Tremaine had one rim fly off a front wheel and crashed into a curbing, breaking two more wheels. It was delayed there 12 hours until new wheels could be secured. Tremaine drove on to San Diego, Yuma and Phoenix and arrived second, though his running time was so great as to preclude him from participation in the prize money. His plucky race after his hard luck was one of the sensational features of the contest. His running time between Yuma and Phoenix was better than that of any car except the Cadillac. W. W. Bramlette, in the Cadillac made a good showing this side of Yuma, but on the other side his time was slow.

#### Some of the Mishaps

Hard luck stuck to Roger Stearns and the Stoddard-Dayton. Before he stopped to assist the Maxwell he had had trouble. Despite delay and trouble he was only 47 minutes behind the National at Yuma, in running time. He had to stop out of control the next morning to put in a new axle and that put him out of the running.

The Mercer, driven by Harris Hanshue, was a serious contender until Dome was passed. It was right up with the Franklin and National, but Hanshue got lost and broke a steering knuckle and did not arrive till midnight.

The little Flanders 20 negotiated the distance between Los Angeles and Yuma in 16 hours 43 minutes, putting it in seventh place. A mile out of Yuma it broke a flywheel and was out of the race.

Bill LaCasse drove a good race in the E-M-F, arriving in Phoenix at 9:10 Monday evening. Minor troubles delayed him on both sides of the river.

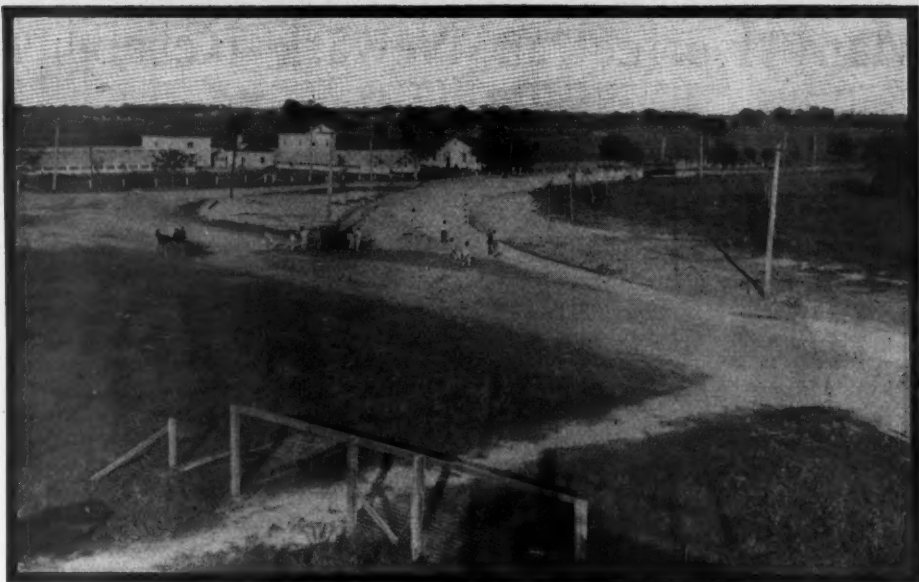
One of the favorites, the Cole, made a poor showing in time. Its engine was jarred loose from the base and it dragged all the way. The Cole arrived today.

The Lexington, driven by Charles Bigelow, made a good showing for a comparatively light car. It arrived about midnight after having experienced various tire and engine difficulties.

Only meager reports have been received of the Case, a Phoenix car driven by W. F. Brong. It was last seen in a ditch between San Diego and El Centro. Brong and his mechanic were asleep beside it.

#### SAVANNAH ENTRY LIST GROWING

Savannah, Ga., Nov. 4.—To date there are thirty-seven cars nominated for the road races of Thanksgiving week. Ralph de Palma and Spencer Wishart will be two of the Mercedes drivers, while Louis Husbrow will drive the Pope Hummer. Hughie Hughes is named as one of the two Mercer drivers, while the Lozier team is to be Mulford and Grant. Harry Cobe will drive a Jackson.



WORKING ON ROAD RACE COURSE AT SAVANNAH

It is expected the Benz cars will be here next Wednesday, while before the end of the week the Loziers, Mercers and Jacksons will come. The work on the course has been completed, the finishing touch being the oiling of the road in front of the grandstand.

All of the net profits of the races will go to the military of Savannah. The Savannah military, which is composed of commands having a long and proud history, six of the fourteen companies being more than 100 years old, always has co-operated actively with the officials of the Savannah Automobile Club in promoting past events. To their efficiency in guarding the course in the previous grand prize races is attributable the securing of that race and the acquisition of the Vanderbilt cup race this year. In none of the three big races held in Savannah has there ever been an injury to a spectator, except to one man who received the point of a bayonet in his side when he insisted in an attempt to cross the course during the progress of the first grand prize race. No one is allowed on or close to the course who is not armed with a pass signed by Mayor Tiedeman and countersigned by Colonel O'Leary.

All preparations are now being made by the military for the guarding of the course this year. The detail will consist of six companies of the First Infantry, four companies of heavy artillery, a troop of cavalry, a battery of light artillery and two divisions of naval reserves. They will be disposed about the full 17 miles of the course and will be assisted by the Savannah police force at and near the stands and home stretch. Sheriff Screven will also be at the head of the shrievalty and assist in the work.

Those who attend the races need have no fear of lack of accommodations. The Savannah Automobile Club and the Savannah chamber of commerce have a regularly organized bureau through which to secure accommodations for those who fail

or do not care to make reservations at the hotels. W. R. Finegan, who is in charge of this bureau, and to whom all applications should be addressed, has a directory of all rooms and other quarters and can give detailed information regarding same. At both of the previous grand prize races at Savannah there has been plenty of room; in fact, each time there were many rooms in the bureau of publicity's directory that were not taken. This year the list of places is larger than ever before, as a very much larger crowd is expected and the list is being augmented about as rapidly as reservations are made. These accommodations may be secured very reasonably. There is yet lots of room at the garages for storing cars, in addition to which there are stables and garages available at many of the private homes. An arrangement has also been made whereby visitors may keep their machines in the park extension, Savannah's big military parade ground, where they will be quartered free of charge.

#### BAY STATE ELECTION

Boston, Mass., Nov. 5.—The Massachusetts State Automobile Association has started on another year and at the annual meeting the officers were very enthusiastic over the outlook. Secretary James Fortesque, who also is the treasurer of the association, had a splendid report to make. New clubs have been organized in Maine, New Hampshire, Vermont and Massachusetts so now the motorists are strongly welded together and will be able to wield a powerful influence in the future when they are all acting together. The addition of several clubs in the Bay State has added several hundred more members to the roll and more clubs are in prospect. Lewis R. Speare, formerly president of the American Automobile Association and the Bay State A. A. was chosen president to succeed A. D. Converse of Winchendon. John P. Coughlin of Worcester was reelected vice-president and James Fortesque secretary-treasurer.

# Many Perfect in Newark Reliability

Twenty-seven of the Thirty-four Contestants in Endurance Run Promoted by the Star Escape Penalization in Journey of 127 Miles—Demerits Are Given for Car Stops and Lateness

NEW YORK, Nov. 3—Twenty-seven of the thirty-four entrants of the Newark Star endurance contest made perfect scores. The run, which was the most successful event of the kind ever held in northern New Jersey, was conducted by the Newark Star under the auspices of the Newark Motor Club. The route covered was 127 miles in circuit and was through the most picturesque part of the state.

The rules provided penalties at this rate for every stop made outside of Newark control except at Hackettstown fuel control, where water, gasoline and oil could be obtained. If these were taken on at any other point on the route a penalty of 3 points was imposed. Each contestant was required to cover the entire route in exactly 7 hours from the time of starting under penalty of disqualification. The time for the trucks was 12 hours. For each minute early or late at the Newark control a penalty of a point a minute was incurred.

The first mishap of the run fell to the lot of the Johnson truck which, in trying to avoid a stone-pile on one side of the road and a post on the other, plowed into someone's front lawn and sank in up to the hubs. For 5 hours the crew worked valiantly and at last got the truck and its load of coal back on the road. They continued the run, although sure to be disqualified, and showed their pluck by covering the entire route, drawing up at the finish line at 1:45 a. m.

The Mais truck had no trouble until it struck a water-break at German Valley and bent its driveshaft, which took 2 hours to repair. Another hour was lost in the Devil's Hole. The truck finished at 9 p. m.

At Hackettstown most of the cars were delayed for a time on account of a change of route necessitated by repairs being made on the bridge over the Morris canal on the direct road to Allamuchy. The cars had to go back ½-mile toward Newark and take a cut-off to Allamuchy. This was the only piece of road on the trip that was not macadamized.

The McFarland No. 1 and the Jackson runabout were late in leaving the Newark control, leaving at 7:12, although their time counted against them. No. 1 became stalled on Hamburg mountain and No. 22, a Maxwell, at Charlottesville, on account of tire trouble. The latter was stalled on Northfield road as well, the penalties for the two occasions being two points. No. 3 Paterson had two punctures at Newton and a blow-out at Hackettstown. This

car arrived so much ahead of time that it was penalized 8 points. The Cutting No. 6, driven by Frank Kramer, the bicycle champion, was fined 1 point because of a stalled motor. No. 15 Auburn runabout was penalized 2 points for stopping the car near the tape. It was 1 minute behind time. No. 4 Metz runabout was fined 1 point for faulty equipment. No. 29 Schacht was fined 1 point for stopping the motor in Hackettstown. The results:

| No. | Name of Car      | H.P. | Driver          | Penalties |
|-----|------------------|------|-----------------|-----------|
| 2   | Jackson          | 30   | J. D. Nicol     | 0         |
| 5   | Ford             | 22   | C. B. Wyckoff   | 0         |
| 7   | Penn             | 30   | G. M. Reynolds  | 0         |
| 8   | Correja          | 35   | E. G. B. Riley  | 0         |
| 9   | Haynes           | 30   | E. R. Schuyler  | 0         |
| 10  | Stevens-Duryea   | 36   | G. F. Eveland   | 0         |
| 11  | Buick            | 18   | W. Davenport    | 0         |
| 12  | Cadillac         | 32   | C. E. Fisher    | 0         |
| 14  | American Tourist | 30   | Ray Magruder    | 0         |
| 16  | Auburn           | 40   | J. J. Meyer     | 0         |
| 17  | Hudson           | 33   | R. B. Mann      | 0         |
| 18  | Reo              | 30   | P. Haycock      | 0         |
| 19  | Lion             | 40   | F. L. Appgar    | 0         |
| 20  | Lion             | 40   | M. N. Appgar    | 0         |
| 21  | Maxwell          | 36   | J. W. Mason     | 0         |
| 23  | E-M-F            | 25   | L. F. Pfeiffer  | 0         |
| 24  | Ford             | 22   | R. E. Gillam    | 0         |
| 25  | Flanders         | 20   | M. H. Jolly     | 0         |
| 26  | National         | 40   | H. de Ralsmes   | 0         |
| 27  | Cole             | 35   | J. B. Wallace   | 0         |
| 28  | Premier          | 40   | H. Peterson     | 0         |
| 30  | Oakland          | 30   | Thos. Buchner   | 0         |
| 31  | Correja          | 35   | F. J. Rodel     | 0         |
| 32  | Washington       | 40   | H. O. Carter    | 0         |
| 33  | Lion             | 40   | R. C. Clements  | 0         |
| 34  | Oakland          | 30   | C. J. Maler     | 0         |
| 35  | Herreshoff       | 22   | L. J. Blanchard | 0         |
| 1   | McFarland        | 40   | Thos. McGuire   | 1         |
| 3   | Patterson        | 25   | M. F. O'Neill   | 8         |
| 4   | Metz             | 22   | W. H. Samuel    | 1         |
| 6   | Cutting          | 32   | F. L. Kramer    | 1         |
| 15  | Auburn           | 30   | Peter Dexheimer | 2         |
| 22  | Maxwell          | 25   | C. F. Briggs    | 2         |
| 29  | Schacht          | 40   | J. M. Gray      | 1         |
| 48  | Johnson 3-ton    | 40   | V. Richardson   | Dis.      |
| 50  | Mais 2½-ton      | 35   | C. Robertson    | Dis.      |

## MERCER IN FRENCH GRAND PRIX

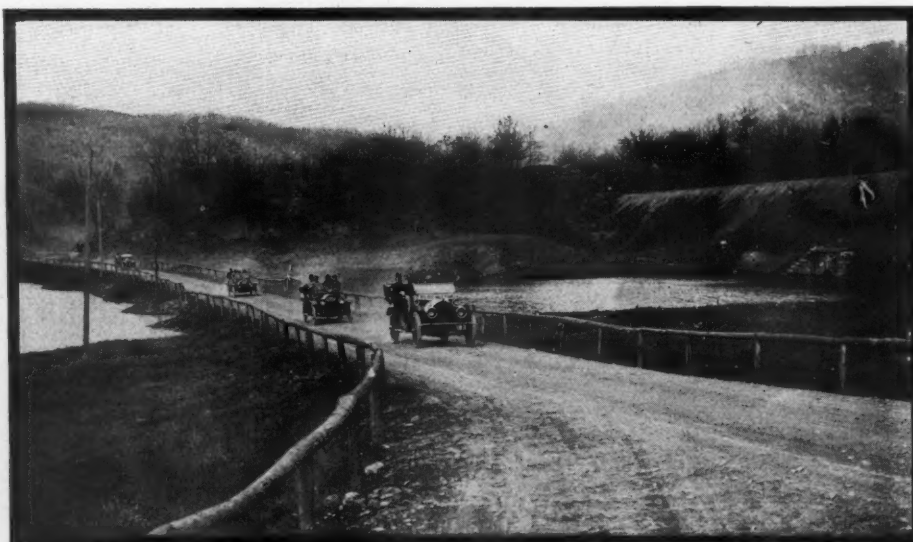
Paris, Oct. 27—A private cablegram just received from the United States states that the Mercer company will enter three American-built cars in the French grand prix which will be run at Dieppe during

the second fortnight in June, 1912.

Nine hundred dollars will enter a team of four cars in the grand prix race. For three cars the entry fee is \$750; for a couple of cars, \$550, and for a single racer it is \$300. These are exceptionally low entry fees, for when road racing was at the hey-day of its prosperity 3 or 4 years ago it cost \$1,000 to enter a single car in the international race organized by the Automobile Club of France. The regulations stipulate that only four cars per firm can be entered for the race, these four comprising both unlimited power speeders and 3-liter racers belonging to one firm. The majority will enter for either one or other of the classes, but it is quite likely such firms as Benz, Fiat and Lorraine-Dietrich will put in two big and two small cars. Entries are open only until December 30; if at this time a minimum of thirty cars has not been secured the race will be called off. If this number is attained, entries can continue to be sent in until March, but at double fees. A special prize of \$4,000 cash is offered to the manufacturer whose car finishes first, no matter in what class it may be entered. In addition there is a money prize of \$2,000 for the best team performance, three cars belonging to one firm to be obliged to finish in order to qualify.

## SEPTEMBER SHIPMENTS

Washington, D. C., Nov. 4—The latest statistics of the government statistical bureau reveal the interesting fact that during September 1,159 motor cars, valued at \$1,121,544, were shipped to various foreign countries, together with parts, not including tires, to the value of \$215,278. The shipments of cars for the corresponding month of last year amounted to 502 machines, valued at \$607,258, with parts, not including tires, to the value of \$137,438. During the 9 months of the calendar year the number of cars exported reached the total number of 11,244, valued at \$11,565,034. This is the greatest figure ever at-



SCENE ON ROUTE FOLLOWED BY NEWARK RELIABILITY



tained in the American export trade in motor cars. The figures for the same period of last year were 6,472 cars, valued at \$8,874,066. Exports of parts, not including tires, increased from \$1,545,933, during the 9 months of 1910, to \$2,423,259 during the same period this year.

The detailed shipments of cars during September last and the 9 months ended September were as follows:

| Exported to—                     | September<br>No. Value | 9 Months.<br>No. Value |
|----------------------------------|------------------------|------------------------|
| United Kingdom...                | 427 \$302,941          | 2,563 \$2,170,264      |
| France .....                     | 25 21,624              | 352 393,443            |
| Germany .....                    | 11 8,050               | 90 109,382             |
| Italy .....                      | 19 13,046              | 161 188,557            |
| Other Europe.....                | 59 59,683              | 633 601,486            |
| Canada .....                     | 186 253,585            | 4,107 4,493,287        |
| Mexico .....                     | 25 34,694              | 187 311,427            |
| West Indies and<br>Bermuda ..... | 20 19,188              | 213 249,799            |
| South America.....               | 128 140,983            | 664 867,292            |
| British Oceania....              | 206 199,654            | 1,467 1,353,398        |
| Asia and other<br>Oceania .....  | 49 44,819              | 603 611,805            |
| Other countries....              | 21 23,277              | 204 217,889            |

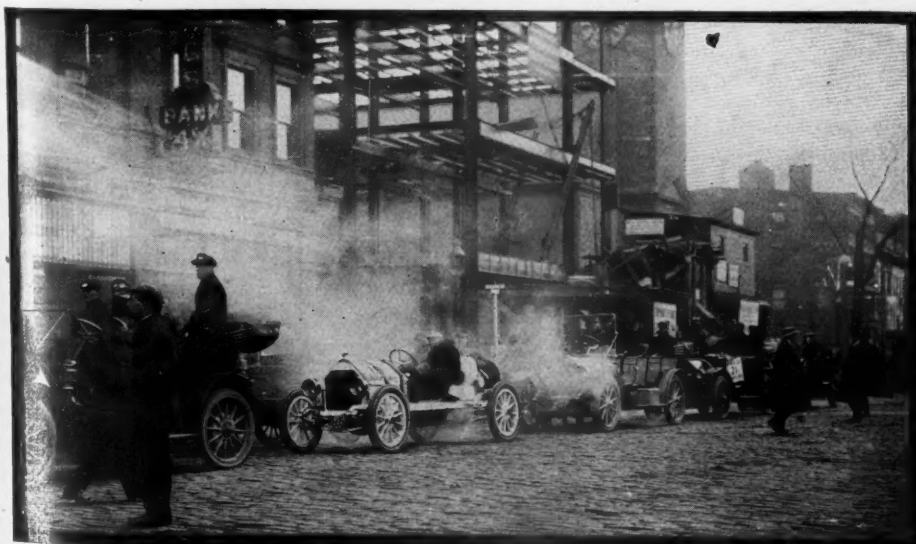
While the export trade in cars and parts is increasing by leaps and bounds, the import trade is losing ground all the time. The imports of cars dropped from eighty-six, valued at \$179,269, in September, 1910, to sixty-two cars, valued at \$137,253, in September last. Imports of parts, not including tires, likewise declined in value from \$34,175 to \$10,042. During the 9 months' period the car imports decreased from 809 cars, valued at \$1,623,140, in 1910, to 670 cars, valued at \$1,450,222, in 1911. Imports of parts declined in value from \$591,780 to \$235,594, during the periods under consideration.

Cars were imported from the following countries during September and the 9 months' period of this year:

| Exported to—        | September<br>No. Value | 9 Months.<br>No. Value |
|---------------------|------------------------|------------------------|
| United Kingdom...   | 14 \$34,102            | 105 \$251,477          |
| France .....        | 18 41,297              | 227 499,769            |
| Germany .....       | 3 7,484                | 113 245,647            |
| Italy .....         | 13 24,014              | 85 135,739             |
| Other countries.... | 14 30,356              | 140 317,590            |

#### ST. LOUIS SETS DATES

St. Louis, Mo., Nov. 5—A 2-weeks' show is announced for St. Louis February 5 to 17 at the Coliseum, by the same dealers who participated in the show held there last winter. This will make the second exhibit in St. Louis this season.



START OF THE NEWARK STAR'S BIG ENDURANCE RUN

## Hill Honors Captured by the National Hoosier-Made Car Wins 301-450 Class and Free-for-all in Climb Promoted by Minnesota Association—Flanders and Ford Among Others to Gain Distinction—Grade in Condition

MINNEAPOLIS, Minn., Nov. 3—Facing a cold, raw wind that blew across the city, 500 spectators yesterday witnessed the hill-climbing contest which was held on Columbia Heights hill under the auspices of the Minnesota State Association. Barring the low temperature, conditions were ideal, the ascent having previously been placed in almost perfect condition.

Driven by Reiter, a National car entered by the Northwestern Overland Co. captured three prizes, the George B. Levy, Prest-O-Lite and Hollis electric trophies going to it. These were won when the National came out victorious in division 4 for cars of from 301 to 450-inch displacement, the free-for-all event, and for making the best time up the hill regardless of class. The best time recorded for the National was in one of its early trials, when it was piloted up the grade in :19%. Its best time in the free-for-all was :20%. Tying for second place in the free-for-all event were the Colby and the Ford entrants, both taking the ascent in :21%. The tie was run off today, the Ford beating the Colby. The Apperson, entered by the Heaney Auto Co., was withdrawn because Herb Lytle was unable to get his car here in time to compete.

In class C the Flanders won the Republic Rubber Co. trophy for cars of 160-inch displacement and under. Its time was :23.27, the average computed by the timers. This car was driven by Simon Rothenberger. There was no other contestant in this division.

By making the fastest time for cars having from 161 to 230-inch piston displacement the Ford, driven by John McDowell, secured the trophy offered by R. J. Randolph. Al Wilson's Jackson qualified

for the Automobile Equipment Co. trophy, the second prize in this division. His time was :22.49. Gus Hansom in a Ford, Dick Stanton in a Cutting, and an Overland were the other contestants.

It was a pretty fight between the Colby and the Everitt, driven by Matt Miles, when these cars lined up for the 231-300 class. The Colby finally won, making the distance in :22%. By its victory it becomes the possessor of the Empire Co.'s trophy, while that offered by the Superior Oil Co. goes to the Everitt.

Art Murphy in a Speedwell entered by the Hudson-Therber Co. captured the Van Tilburg Oil Co.'s cup by finishing second in the event for cars from 301 to 450-inch displacement. This was the event in which the National finished first.

In the large piston class a Peerless, entered by T. M. Anderson, and driven by Ase Precourt, came sauntering up the grade with its regular touring body and full equipment on. When the smoke blew away it was found that this car had won the event for cars in the 451-600 class, making the climb in :27%. The Pure Oil Co. had offered a trophy for the winner. M. R. Nyman in a big Alco finished second in the event. His time was :31.

The climb was 1,300 feet long, with an average grade amounting to 6.63 per cent. The greatest grade at any one place was 10.4 per cent, while the total elevation was 86.2 feet.

#### BIG FIRE IN WASHINGTON

Washington, D. C., Nov. 4—The most disastrous fire in the history of the motor car trade of this city, occurred yesterday, when the service department and shops of the Buick Motor Co., at 1139 Seventeenth street, N.W., were gutted. The loss, according to estimates of Manager T. S. Johnston and Fire Marshal Nicholson, is about \$34,000. The loss is fully covered by blanket insurance to the extent of \$70,000. Twenty-four cars, including sixteen 1912 Buicks, were totally destroyed. The Buick salesroom is at 1028 Connecticut avenue, and temporary quarters for the service department will be secured pending the rebuilding of the former building.

#### JOE JAGERSBERGER INJURED

Columbia, S. C., Nov. 3—A dirt track meet was run here today in which McNay in a Case won everything, three events in all. Prior to the races Joe Jagersberger of the Case team was injured in practice. A tire burst and the car turned turtle. It is thought Jagersberger's right leg, which was crushed in the accident, may have to be amputated.

# Olympia Discloses New Engineering Data

**Progress Shown in Almost Every Department of the Car Industry — Stroke Has Been Lengthened in Every Case — Chain-driven Camshafts Now Used — Multi-casting for Motors on Increase — Four-speed Gearboxes Gain in Favor — Forced-feed Lubrication Coming in General Use — Reduction of Noise a Great Object With the Majority of the English Manufacturers — Sleeve-Valve Types Increasing Steadily in the United Kingdom**

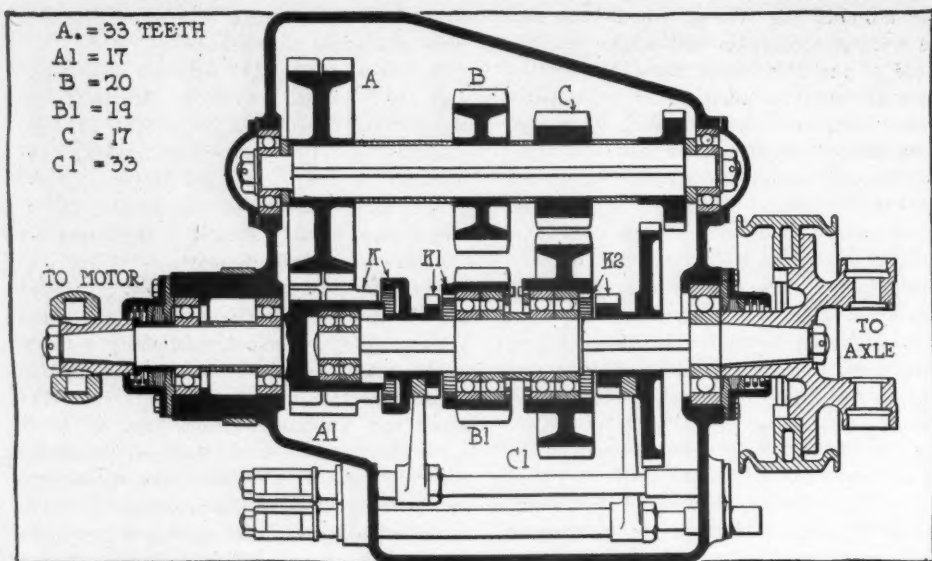


FIG. 1—EXAMPLE OF CHAIN-DRIVEN GEARBOX FOR TOURING CAR

LONDON, ENGLAND, Oct. 28.—All is in readiness for the opening of the annual Olympia show, which is the only international show to be held in Europe this year owing to France having decided on shows at the Grand Palais once every 2 years. Already assurances are on hand to satisfy everyone that this year's exposition will be the biggest one ever held in Europe. The number of exhibitors and the variety of the exhibits will combine to make the affair an epoch marking one. The English maker has worked hard during the past year, so has the European builder, and many novelties and much progress can be expected. Your correspondent has visited the majority of the English factories.

With regard to progress from the engineering point of view, it is interesting to note that the thermo-syphon system of cooling is still increasing in favor; for instance, in 1911 54 per cent of the British cars were fitted with this type of cooling, whereas in the case of the 1912 models the percentage has increased to over 60 per cent, and its application is being made to four-cylinder engines of 4¼-inch bore and to six-cylinder engines of 3½-inch bore.

#### Worm Drive in Favor

The worm drive also seems to be increasing in popular favor, the percentage of cars fitted in 1911 being 24 percent, which has risen to 33 percent for 1912. The worm drive has been shown to give, by recent reliable tests, from 92 percent to 97 percent efficiency. The leather cone clutch still maintains its position: in the 1911 models 55 percent of the cars were equipped with this form, and for 1912 exactly the same per-

centage is found. There seems to be no inclination to substitute in the cone clutch any other material in place of leather; an instance will be found however of a leather cone clutch working in a bath of castor oil. The metal-to-metal cone clutch is a type of which very little will be heard, the multiple-disk and single-disk clutches practically taking about equal proportions of cars not fitted with the leather cone clutch. Certain leather cone clutches will be found with a spring device interposed behind the leather as a means of preventing shock due to faulty engagement.

Amongst the French manufacturers, and particularly for large chassis of the passenger type, the corrugated-plate clutch continues to be largely used, and it would appear that the French manufacturers have given this type of clutch more serious consideration than the British.

The single-disk clutch is adopted by several British firms, but in all cases a certain

amount of lubrication is employed. The expanding and contracting clutch appears to no longer interest European manufacturers.

#### Gearbox Developments

The latest development in gearboxes appears to be in the substitution of chains for spur gears. This form of gear has been employed by the London General Omnibus Co. now for some period, and one British firm, namely the Maudslay company, has adopted it for a standard gearbox for 1912.

An illustration of this type of gear is shown, Fig. 1; this gearbox transmits 17 horsepower at 1,000 revolutions per minute; the pitch of the chains is ⅝ to drive A and C and ¾ for B drive, the width over the rivets being 1.231 inches, 1.65 inches and 1.69 inches, respectively.

The gearbox gives three speeds, the top speed being direct by clutch teeth K and the reverse being obtained by spur wheels. The advantage of this type of gearbox of course is that it is perfectly quiet at the first and second forward speeds. The clutches K 1 and K 2 are used.

With regard to the efficiency of the chain drive, tests of a ¾-inch chain with a working width of 1.15 inch running over two equal size wheels with eighteen teeth, gave a test efficiency of 94.5 per cent. The greatest width of the gearbox referred to is 16 inches only and the inside dimension 12 inches, so that the actual space occupied is very little more than the ordinary spur-driven box. The weight of course is rather more owing to the heavier wheels and the chains.

The Maudslay chain-driven gearbox, Fig. 3, has four speeds, all indirect.

Apart from the advantage of complete silence, the so-called silent chain automatically readjusts its pitch circle to compensate for wear; in other words, the chain will ride higher on the wheels if the chain elongates, and assume the same relative positions as it comes in contact with the teeth. Thus not only wear in the

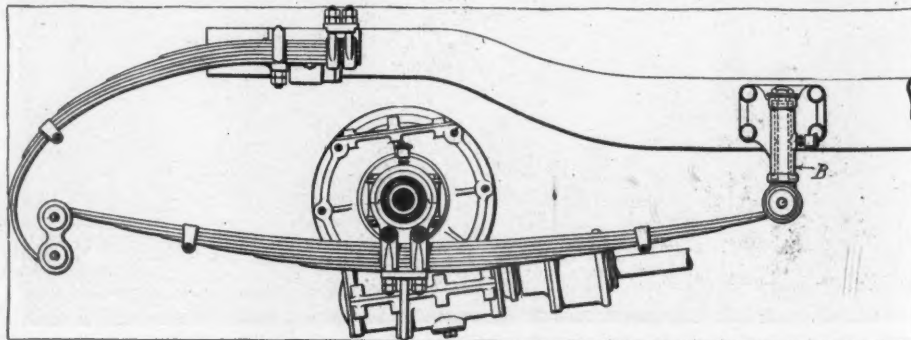


FIG. 2—REAR SPRING SUSPENSION IN WOLSELEY CARS



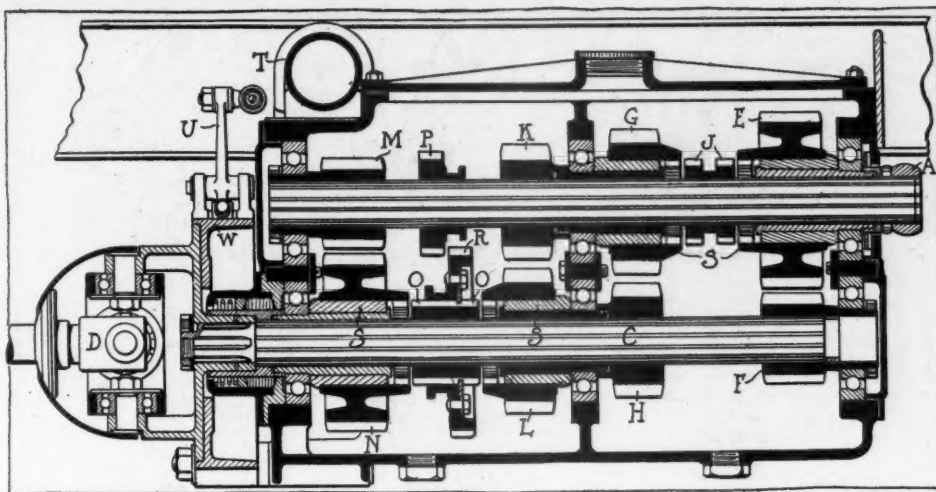


FIG. 3—THE MAUDSLAY CHAIN-DRIVE GEARBOX FOR NEXT YEAR

teeth, but wear in the bearings of the shafts, which would alter the relative positions of the shafts, will not affect the drive as in the case of toothed gears.

With spur-driven gearboxes there is a decided move in the direction of four-speed boxes. The Daimler company, which has hitherto constructed only three-speed gears, is for 1912 now building three of their models with four-speed gearsets. During the years 1909 and 1910 there was a distinct move in the direction of having the direct speed one of the intermediaries; the supposed advantage of this system, however, does not appear to have worked out well in practice, and it will now be generally found that the fourth speed is the direct speed.

#### Bevel and Worm Axles

Reference has already been made to the percentage of cars fitted with the worm axle drive. It is interesting to note that

practically all the new models introduced, with the exception of the Sunbeam car, are employing the worm drive. At the present time there are at least four British firms who are specializing in the cutting of worm gears for chassis manufacturers, and it is true that, although their productions have a common resemblance, results show that they are not all equally good as regards efficiency. The cutting of worm gears for motor cars is a highly specialized process, and is one which is not to be undertaken without a very considerable amount of study and equipment of proper plant for the effective cutting of the worms and wheels.

The problem of lubricating the worm gear is in reality a simple one, although a certain amount of doubt appears to be in the minds of some regarding it where the worm is super-imposed on the worm wheel; however, on this point there is

evidence that the efficiency of the drive is in no way reduced by that position, and that the efficiency of the overhead system is equal to the worm in the lower position. It is true that there may be a slight extra friction when starting up, but immediately the worm wheel has made one revolution sufficient oil is carried round to effect efficient and satisfactory lubrication. The firms who are in the position to make a thorough study of the worm drive are more than satisfied with the results obtained.

#### Suspension of Chassis

There appears to be a little change in the method of fitting springs; the  $\frac{3}{4}$  elliptic springs for the back are quite an accepted method of construction, and the use of a back cross spring, which at one time was of considerable vogue, is on the decline. The use of helical springs with shackle straps as a form of shock absorber has been now adopted by many European manufacturers—a device which is of American origin.

A somewhat novel method of springing is introduced by the Wolseley company in its 16, 20 and 28-horsepower models, Fig. 5, where long three-quarter elliptic springs, Fig. 2, have been adopted; the front bracket B is made to swivel somewhat after the style of a plain bearing steering head, to improve the lateral flexibility of the live axle. The fact that the C-shaped three-quarter spring has very little lateral stability assists this action in the same way as does the cross swivel link attaching the transverse springs.

This arrangement of three-quarter spring has been found to give better riding than the semi-elliptic springs, particularly on light cars, by enabling the cars

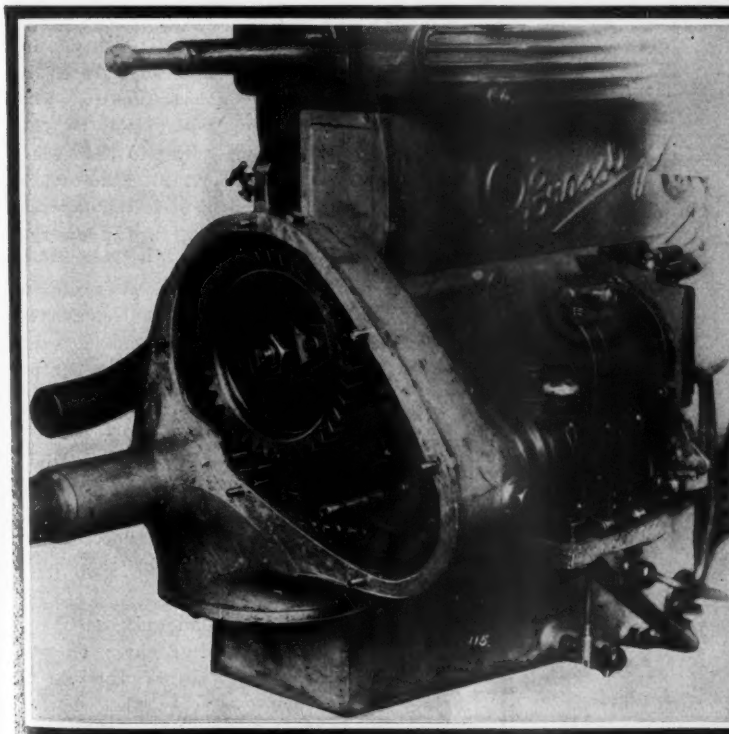


FIG. 4—CHAIN DRIVE FOR CAMSHAFTS ON THE CROSSLEY 1912 MOTOR

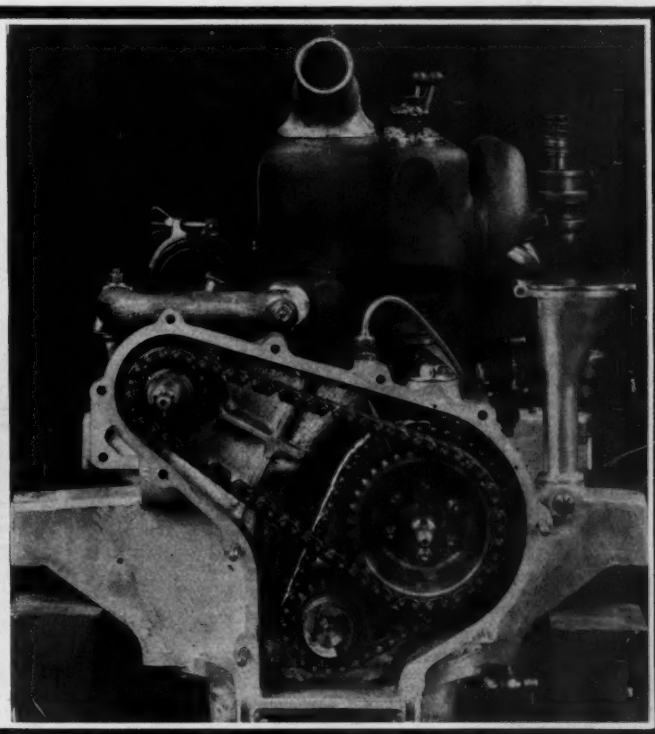


FIG. 5—CHAIN DRIVE FOR CAMSHAFTS ON WOLSELEY 1912 MOTOR

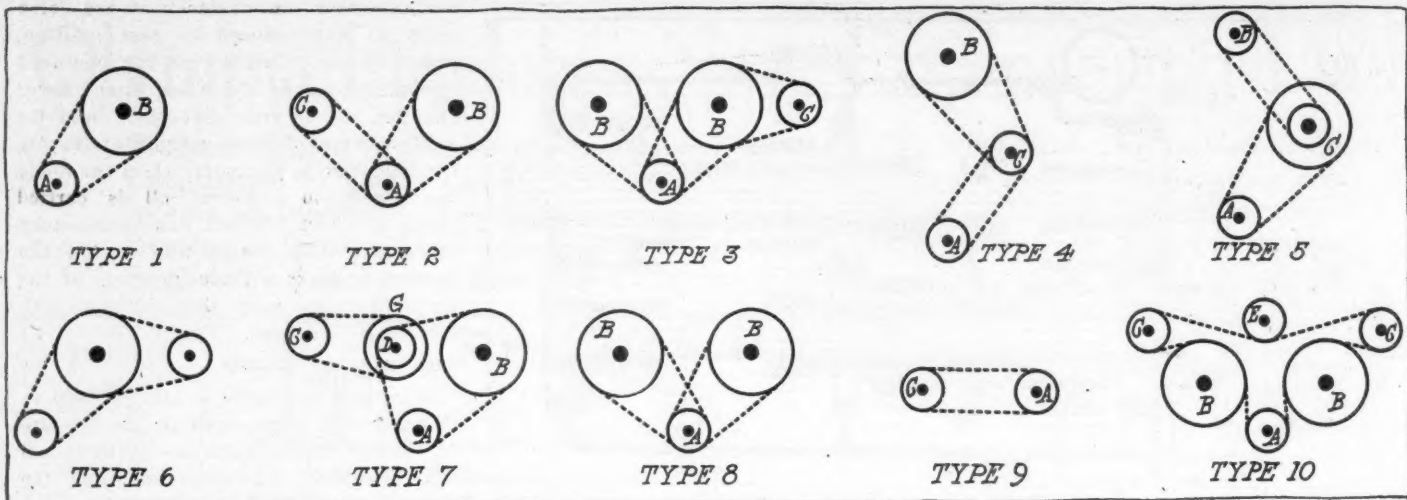


FIG. 6—LEADING ARRANGEMENTS OF SILENT CHAINS FOR MOTOR USE ON ENGLISH CARS

to hold the road better, and is considerably lighter than the transverse arrangement still retained for some large models which are used particularly for closed carriages. Further, the slackness which sometimes occurs with spring pins, both endwise and in bearings, is provided for by fitting a spring pin joint with hardened pins, the said pins being made hollow and provided with grease lubricators and proper grooves for leading the grease over the bearings. The bearings working on the pins are carried by the springs and are formed of two flanged phosphor bronze bushes.

Since the adoption of chains for driving camshafts by the Daimler company 2 years ago there has been a very large increase in the number of makers adopting the same principle. The two illustrations, on of the 15-horsepower Crossley engine, Fig. 4, and the other of the 16-20-horsepower Wolsley, Fig. 5, show the adaptation of this principle, which has become the accepted method of driving camshafts by

the majority of the English manufacturers. Fig. 7 gives a section and end view of the drive adopted on the Crossley motor.

The diagram, Fig. 6, illustrates nineteen different types of chain drives for camshafts and magnetos, and the following is a short description of each type of drive:

Type 1—This is the most usual type employed, and is by a single chain from the crankshaft to one camshaft with fixed centers for the wheels. In this case the magneto, pump or fan are generally driven off the camshaft by suitable gearing.

Type 2—This shows two drives from the crankshaft pinion, wheel B being on the camshaft and wheel C being on the magneto or pumpshaft. The centers in this case should be fixed.

Type 3—This shows the drives for two camshafts, on which are mounted wheels B, and a drive from one of the camshaft wheels to the magneto or pump wheel C, which may be driven from either camshaft. The centers should be non-adjustable.

Type 4—Shows the most satisfactory solution for driving overhead camshaft with chains. The crankshaft pinion A drives the double pinion C, which is generally mounted on the magneto shaft, and in all cases lateral adjustment should be provided for this pinion. The pinion C then drives the wheel B mounted on the camshaft.

Type 5—This is similar to Type 4, with the exception that the magneto pinion C runs at half the engine speed.

Type 6—This shows the magneto pinion C mounted on the same side of the engine as the camshaft in Type 2. Two chains are used in this case and the centers are generally fixed, although lateral adjustment can be provided for the pinion C.

Type 7—The crankshaft pinion A drives the camshaft wheel B by means of a chain running over the adjustable wheel D, mounted on a bracket which swings about the center of C, so that the centers of C and D are fixed, while adjustment is provided for the camshaft chain. The wheel G may be of equal size to the wheel C or larger, according to the speed required at C. The adjustable axle of the wheels D and G may also be provided with suitable means for driving a fan on the shaft.

Type 8—The double crankshaft pinion A drives by two chains the camshaft wheels B and B. This proposition is in reality a duplicate of Type 1, both center distances being fixed.

Type 9—This is a drive by equal wheels generally for operating pumps and magnetos, and in some cases for driving a camshaft. The centers may be fixed or adjustable for the pump or magneto drives only, but should be fixed for the camshaft drive.

Type 10—This drive can only be operated by a roller or similar chain on account of the reverse side of the chain being used to drive some of the wheels. The crankshaft pinion A drives the camshaft wheels B and the pump and magneto wheels C in the same direction and

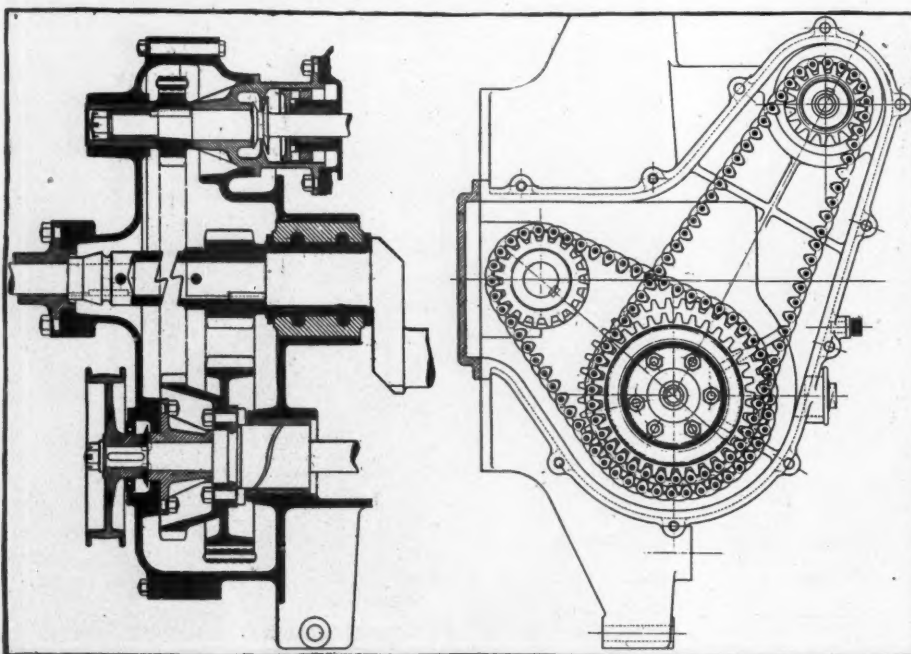


FIG. 7—VERTICAL SIDE SECTION AND END VIEW OF CROSSLEY MOTOR BUILT FOR USING SILENT CHAIN DRIVE FOR CAMSHAFTS, MAGNETO AND PUMP SHAFTS



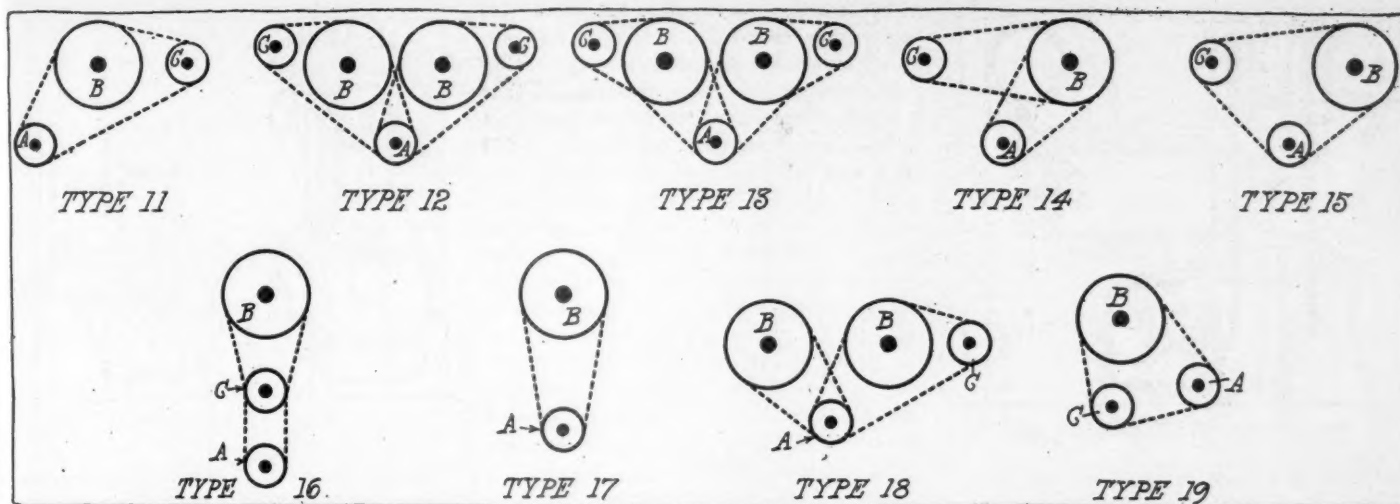


FIG. 6—LEADING ARRANGEMENTS OF SILENT CHAINS FOR MOTOR USE ON ENGLISH CARS

rotation as would be obtained with spur gears, this being in contrast to all other similar drives shown in this group. The pinion E is adjustable in a vertical direction to take up the wear in the chain, the other centers being fixed. The very small amount of free chain between the pinions A and B is a decided advantage inasmuch as the angular timing motion of the wheels B is practically not affected by the wear and elongation in this short length of free chain.

Type 11—The disposition of these wheels is similar to those of Type 6, but only one chain is used to drive all three wheels. In this case it is essential that the pinion C should be made adjustable and that the free length of chain between the pinions A and C should be kept as short as possible.

Type 12—This is a right-and-left-hand drive similar to Type 11, the pump and magneto pinions C always requiring to be made adjustable.

Type 13—The disposition of these wheels is similar to Type 12, but two chains are used in place of each of the triangular drives. This drive is a duplicate of Type 6, and the centers may all be fixed, although the centers of pinions C can be made adjustable if desired.

Type 14—The wheels shown here are similarly disposed to those shown in Type 2, but the wheel B is a double wheel, and drives pinion C which may be adjustable in a horizontal direction.

Type 15—The wheels in this proposition are similarly disposed to those shown on Types 14 and 2, but are driven by one chain only. This drive cannot be recommended by reason of the small length of contact between the chain and the driving pinion A. This drive requires a chain as wide as the two chains required on Types 2 and 14. It is imperative that provision be made for the constant adjustment of the pinion C.

Type 16—This drive for overhead camshafts is not as good as that shown on Types 4 or 5, all the centers being fixed. The pinion C can be arranged to drive magneto or fan.

Type 17—This drive should be avoided wherever possible, even if it can be arranged for adjustment of the centers. The tendency of the chain on this drive is to leave the teeth on the lower portion of the pinion A by reason of the weight of the chain accentuated by the driving effort of the teeth against the inclined faces of the chain.

Type 18—This is a combination of the drives of Types 11 and 1. The center C will require to be adjustable, but the centers B will be fixed.

Type 19—This is one of the few triangular drives that can be expected to give really satisfactory results. With the engine revolving clockwise, the camshaft B is on the left-hand side of the engine, the magneto C being placed below this. Adjustment for the pinion C is necessary, preferably in a vertical direction, and it will be noted that in this case the length of chain in tension between the driving wheel A and the camshaft wheel B is small in contrast to the drive shown on Type 11 with the engine running in the same direction.

It should be noted that where one chain

drives another by means of a double wheel or pinion, that chain will of necessity be wider than the driven chain when the intermediate pinion or wheel operates a camshaft, magneto, pump, etc. The more usually adopted types are Nos. 1, 2, 4, 6, 7, 8, 9, 11, 13, 14 and 16.

The call for silence in motors has undoubtedly led to the large adaptation of this system of driving; silent working is an absolute necessity for British motor vehicles, and great improvements have been made in the silencing of the poppet-valve engine. The chain drive is only one of the factors which have assisted in the reduction of noise, and there are now many poppet-valve engines which it is hard to distinguish from the sleeve-valve engine. Last year one saw the enclosing of the valve tappets; no modern engine is now made without this arrangement. In order to further silence the tappets there is an interposing of cushion springs against the intermittent contact of the tappet with the profile of the cam.

Whilst devices of this nature are quite satisfactory when really properly designed, they are worse than useless if

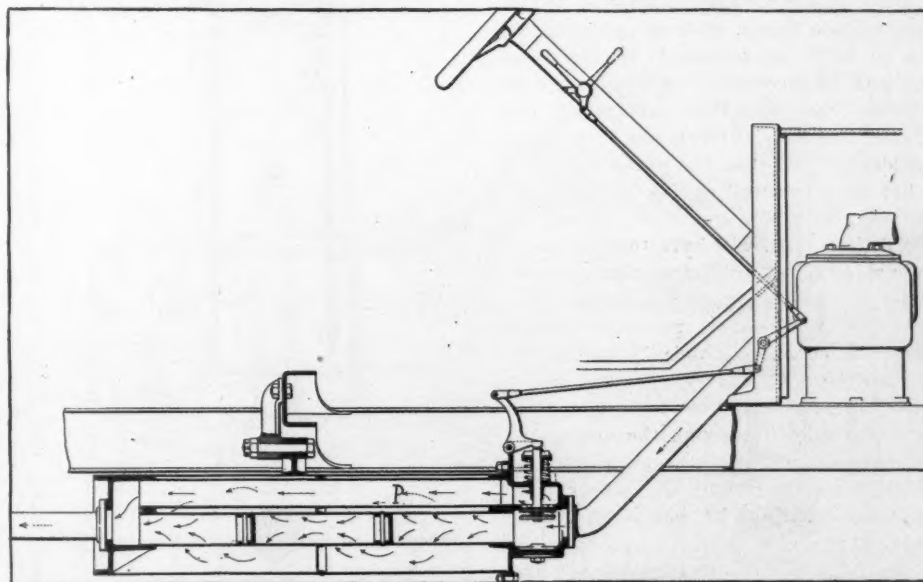


FIG. 8—DOUBLE MUFFLER SYSTEM USED ON WOLSELEY CARS TO GIVE GREATER SILENCE WHEN CUTOUT IS USED

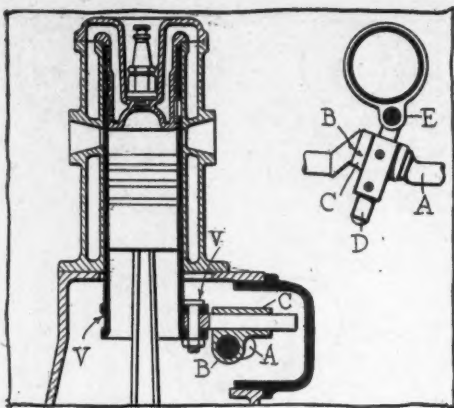


FIG. 9—ARGYLL SLEEVE-VALVE MOTOR

attempts are made to carry out the same with an idea of cheapness. The silencing of the induction to the carburetor is also a point which is receiving attention, and in some cases the suction of air has been taken through the base chamber, which acts as an induction silencer.

Mufflers are being improved, and Fig. 8 shows a form of dual muffler fitted to all the larger Wolseley models. A reference to the drawing will explain the system. A by-pass P allows a portion of the gas to escape direct through the tail pipe to the atmosphere, having exactly the same effect on the engine as the usual noisy cut-out, but without the noise. Although this by-pass when opened makes the engine considerably more noisy when running slowly, under ordinary touring conditions the difference is scarcely noticeable. It is found in practice that in addition to increasing the power of the engine at high speeds there is a saving of gasoline due to the free exhaust. This dual muffler has not been adopted on the smaller models, as naturally the difference is not so noticeable, and the small advantage gained was not considered to warrant this extra expense and complication. The lever for operating the cut-out is provided on the steering column.

Many details in improvements in oil systems will be found, such as improved access to filter, improvements in the filtration and improvements in the means for filtering. In two or three instances it will be seen that the oil pump has been raised considerably, so that the pump will have to lift the oil as well as circulate it to the bearings; with this system, of course, the pipe fittings, etc., will have to be suitably made so as to insure perfect tightness and render the system proof against air leakage. The use of hollow transverse troughs below the connecting rods is more popular than the arrangement of drilled crankshaft. In some cases the troughs are fed by separate leads through the circulating system, whilst in one or two instances the troughs receive surplus oil through the crankshaft bearings by means of suitable conduits.

With regard to new engines, at least one new sleeve-valve engine will be handled commercially next season; this is the

25-horsepower Argyll, Fig. 9. With this engine the sleeve-valve V receives an oscillatory movement as well as a reciprocating one; these motions being combined so that a point on the sleeve traces practically an elliptic or circular path, being compounded of a vertical movement and a horizontal one. To provide this movement the valve-actuating shaft A is provided with an angular crankpin B on which is mounted the journal block C, whilst through this slides a spindle D pivotally connected to the sleeve V. This angular crank actuates the sleeve and it combines with the vertical movement, the necessary oscillating one which gives the sleeve the desired travel. This engine has a bore of 4 inches and a  $5\frac{1}{4}$ -inch stroke.

Another sleeve-valve engine, which is being put through exhaustive shop tests, is illustrated in Fig. 10. This engine is provided with a single dumb-bell piston valve A, adapted to put the cylinder into communication either with the inlet or exhaust passage according to its vertical position. The invention consists in the method of operation of the piston valve and it will be seen that the piston rod is connected at B with an eccentric rod C actuated by an eccentric on the engine crankshaft, whilst the valve piston rod is also connected by a link D to the crankpin E on the half-time shaft. The links C and D therefore act at times as a toggle, with the consequence that the valve A receives a very rapid movement when the ends of the toggle links D and C move towards each other, whilst periods of dwell can be obtained when the ends of the toggle links move in the same direction. The diagrammatic drawing shows at G the path of the center of the pin B, and it will be seen to be roughly 8-shaped. When the pin B is moving along the vertical portion of the 8, the valve is moving rapidly from one open position to the other.

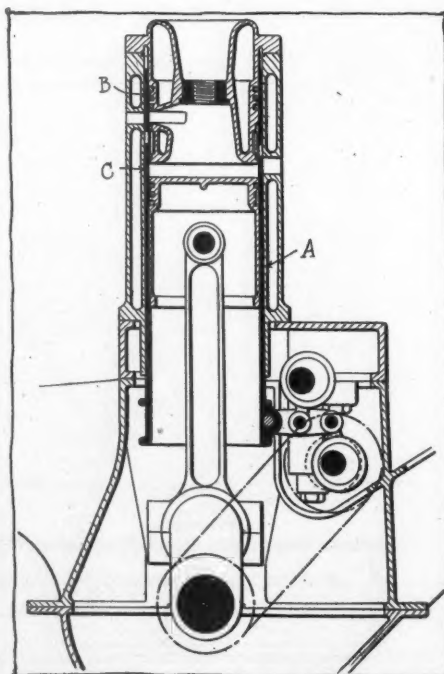


FIG. 11—TYPE OF SLEEVE-VALVE MOTOR

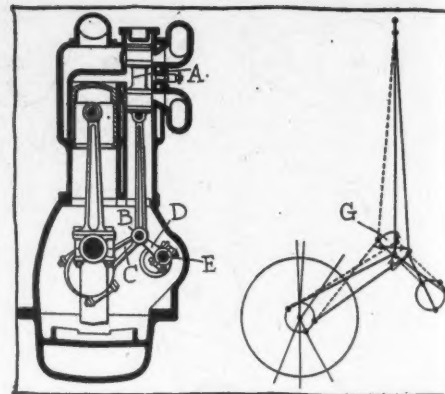


FIG. 10—PISTON VALVE MOTOR TYPE

When it is moving in an approximately horizontal direction it will be understood that the piston A hardly receives any movement at all, this being the case during most of the compression and exhaust strokes. A similar design is shown in Fig. 11. The following description refers to the diagram: The engine is provided, with the usual piston, connecting rod, crankshaft and other parts, and also a cylinder casing A, fixed head B and one sliding sleeve C. Ports in the sleeve and casing serve for inlet and exhaust, the admission port being situated above the lower end of the fixed head B and communicating with the working cylinder space by a passage in the head. The head B is provided with a wide junk ring or packing segment around its lower circumference, which seals the sleeve ports throughout that period of the engine cycle during which the combustion space has to be closed. The motion of the sleeve necessary for causing its ports to communicate alternately with the ports in the casing is communicated thereto by means of the eccentric shafts, one of which rotates at the same speed as the crankshaft, and the other at a two-to-one reduction. The motion is communicated from the shafts to the sleeve by means of a compounding lever, one point of which is articulated to the sleeve itself, and two other points, situated as may be convenient, articulated to the tail bearings of the eccentric rods provided for this purpose. From this mechanism the sleeve receives its motion in part from the slow-speed shaft and in part from the high-speed shaft.

The multiple cylinder system of casting will in all probability be more in evidence than previously, but in most cases it will be found that a central bearing will be provided for the crankshaft. With regard to the proportion of bore to stroke, the following list gives the bore and stroke of a number of new models, from which it will be seen that there is quite a tendency to increase the stroke-bore ratio:

The Sunbeam company, which has achieved some wonderful results with its 20 m. m., 3.14-inch engine, it should be noticed, is running a stroke of 150. On Brooklands track an engine of these dimensions has been timed to run a long-



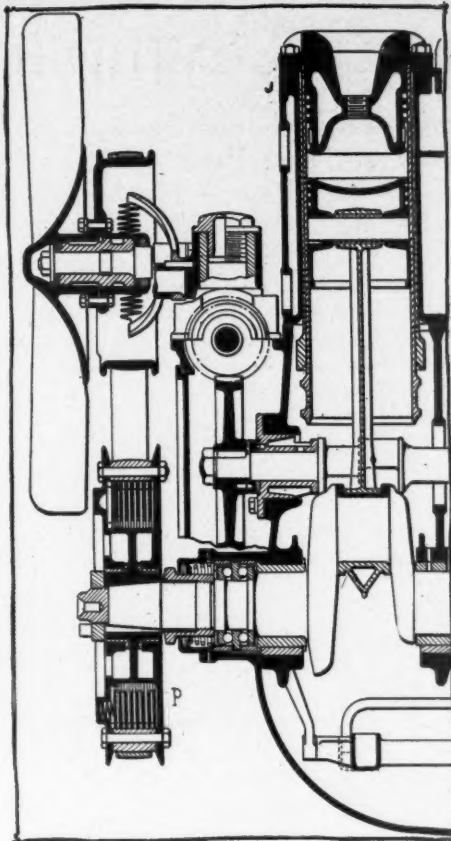


FIG. 12—REGULATOR ON FRONT END OF DAIMLER CRANKSHAFT

distance record of 27 miles at the rate of 79.2 miles per hour, and the 90 by 160, 3.54 by 6.29-inch, six-cylinder engine has been timed at the rate of 75.6 miles per hour in a 12-hour run of 907 miles 1,500 yards.

Most motorists will have noticed that certain engine speeds, which I might term critical speeds, six-cylinder engines in particular, develop a thrash, which as a rule decreases or entirely disappears when this critical speed is passed. A great many experiments have been conducted in connection with six-cylinder engines to eradicate this defect. The illustration of the general arrangement of the 30-horsepower six-cylinder Daimler engine shows a solution of the difficulty. Referring to the illustration, Fig. 12, it will be seen at the forward end of the crankshaft there is a peculiar construction in connection with the fan pulley P. This is the new patented Daimler vibration damper, which may best be described as a small multiple-disk clutch, half of the plates of which are fixed to the crankshaft, and the other half to the fan pulley, and the action is as follows: As a clutch it is permanently engaged, but as the engine starts up and the periodic tremor sets in, the momentum of the outer rim creates a tendency for the plates to slip if the crankshaft suddenly changes its angular velocity, and the amount of friction set up is sufficient to immediately steady the revolving masses, and so prevent the vibration which would otherwise occur.

## THE STROKE-BORE RATIO

|                | —Bore and Stroke— |           |
|----------------|-------------------|-----------|
|                | Millimetres       | Inches    |
| Mercedes       | 70x120            | 2.75x4.72 |
| Hotchkiss      | 95x120            | 3.74x4.72 |
| Minerva        | 80x125            | 3.14x4.92 |
| Minerva        | 100x140           | 3.93x5.51 |
| Minerva        | 124x150           | 4.88x5.90 |
| Delage         | 66x125            | 2.59x4.92 |
| Benz           | 72x120            | 2.83x4.72 |
| Benz           | 80x110            | 3.14x4.33 |
| Benz           | 105x165           | 4.13x6.49 |
| De Dion        | 66x120            | 2.59x4.72 |
| Flat           | 80x140            | 3.14x5.51 |
| Benz Sohne     | 85x115            | 3.34x4.52 |
| Benz Sohne     | 90x140            | 3.54x5.51 |
| Alblon         | 79x127            | 3.11x5.00 |
| Argyll         | 72x120            | 2.83x4.72 |
| Argyll         | 80x120            | 3.14x4.72 |
| Argyll         | 90x140            | 3.54x5.51 |
| Armstrong      | 80x135            | 3.14x5.31 |
| Armstrong      | 85x135            | 3.34x5.31 |
| Armstrong      | 90x135            | 3.54x5.31 |
| Baguley        | 90x130            | 3.54x5.11 |
| Belsize        | 69x130            | 2.71x5.11 |
| Briton         | 68x114            | 2.67x4.48 |
| B. S. A.       | 75x114            | 2.95x4.48 |
| Calthorpe      | 69x125            | 2.71x4.92 |
| Calthorpe      | 80x150            | 3.14x5.90 |
| Clement Talbot | 80x120            | 3.14x4.72 |
| Clement Talbot | 90x140            | 3.54x5.51 |
| Crossley       | 80x120            | 3.14x4.72 |
| Daimler        | 80x130            | 3.14x5.11 |
| Daimler        | 90x130            | 3.54x5.11 |
| Daimler        | 101x130           | 3.97x5.11 |
| Deasy          | 75x110            | 2.95x4.33 |
| Deasy          | 80x130            | 3.14x5.11 |
| Napier         | 82x127            | 3.22x5.00 |
| Standard       | 79x120            | 3.11x4.72 |
| Humber         | 68x120            | 2.67x4.72 |
| Lanchester     | 101x101           | 3.97x3.97 |
| Maudslay       | 90x130            | 3.54x5.11 |
| Arrol Johnson  | 65x120            | 2.55x4.72 |
| Arrol Johnson  | 80x140            | 3.14x5.51 |
| Rover          | 96x130            | 3.77x5.11 |
| Rover          | 75x130            | 2.95x5.11 |
| Singer         | 80x130            | 3.14x5.11 |
| Swift          | 68x110            | 2.67x4.33 |
| Swift          | 85x120            | 3.34x4.72 |
| Star           | 68x120            | 2.67x4.72 |
| Star           | 80x120            | 3.14x4.72 |
| Sunbeam        | 80x150            | 3.14x5.90 |
| Sunbeam        | 90x160            | 3.54x6.29 |
| Thames         | 80x135            | 3.14x5.31 |
| Vauxhall       | 90x120            | 3.54x4.72 |
| Vulcan         | 80x120            | 3.14x4.72 |
| Wolsley        | 80x120            | 3.14x4.72 |
| Wolsley        | 90x130            | 3.54x5.11 |
| Wolsley        | 120x130           | 4.72x5.11 |
| Wolsley        | 140x146           | 5.51x5.74 |

The Rolls-Royce company has evolved a device for the same purpose. The method adopted by the Fiat company in connection with its 15-horsepower car for heating the combustible mixture is a construction worthy of note, and is illustrated in Fig. 13. To prevent having to provide special means for heating the carbureter chambers, and to simplify the

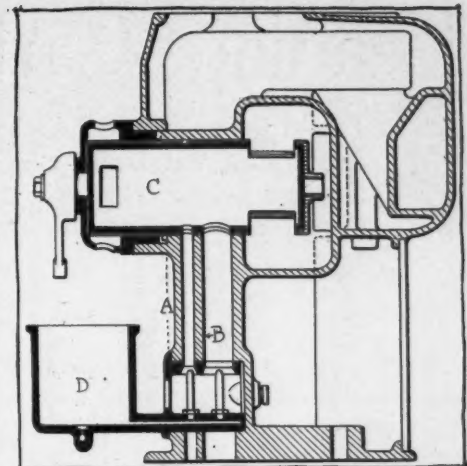


FIG. 13—FIAT CYLINDER WITH CARBUR-ETER PIPES INCORPORATED

pipings arrangements, the cylinder has the usual carbureter passages cast in it, and the float chamber which carries the jets is attached thereto. The central pair of cylinders in the case of a four-cylinder engine are set at a suitable distance apart, which incidentally accommodates the central crankshaft bearing. At this point the cylinder casting is formed with a web A which has a rib B bored out to form the main carbureter passages. These communicate with the throttle barrel C which is located in the water-jacketed part, whilst into the lower end of the carbureter passages project the jet nozzles which are carried by a hollow arm extending from the detachable float chamber D.

The position of the radiator at the front is still adhered to in the great majority of new types. The Renault position does not find many imitators.

A very neat pump arrangement is adopted by the Albion company with a new type 15-horsepower model. This is illustrated in Fig. 14. The pump P is attached to the fan spindle and is placed within the water-jacket J of the front cylinder.

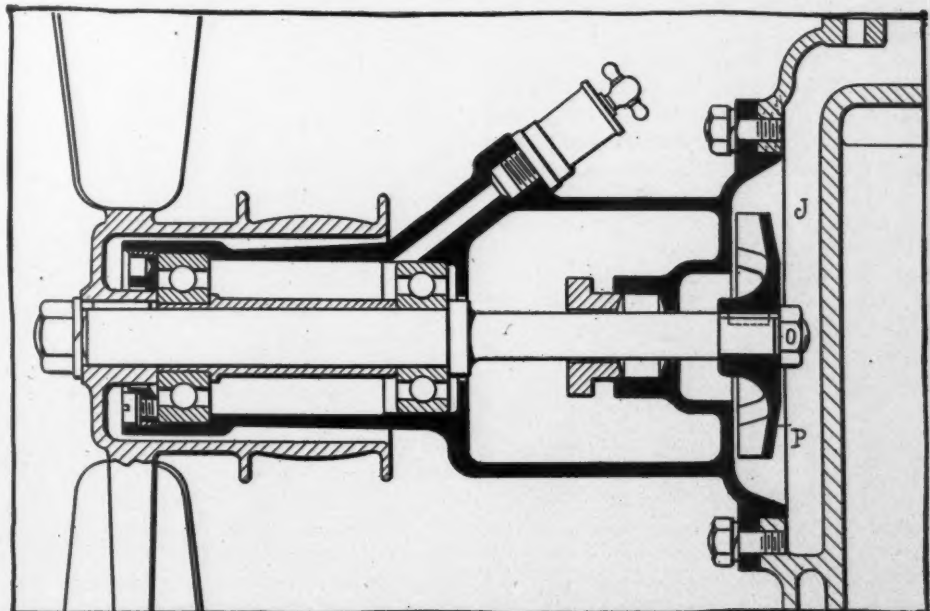


FIG. 14—ALBION PUMP ATTACHED TO FAN SPINDLE AND PLACED IN WATERJACKET

# Leading Carbureter Types at Olympia

**Descriptions of the Principal Types That Are Now Being Exhibited at the Olympia Show in London, England—Simplification of Parts, Ready Removability of These Parts, and Greater Accessibility Are the Objects Aimed At by Nearly All of the Big Makers—Much Progress Shown in This Department of the Motor Car Industry for the Coming Season.**

QUITE superficial observation is sufficient at the present time to indicate the fact that there is a growing tendency for the manufacturer to rely upon the specialist in the matter of carbureter design. There are a great number of specialists connected with the motor car industry—the ignition specialist, the ball-bearing specialist, the radiator specialist, amongst others, and within the last few years the carbureter specialist has sprung into being. There is indeed so much specialized knowledge necessary for the construction of the efficient modern car that manufacturers no doubt do well to concentrate attention upon what may be termed general features, and leave to others with a great deal more time at their disposal the pursuit of knowledge, experience and improvement of such special details as just mentioned, the carbureter being without doubt the latest specialized fitting.

The simple, single, unvariable-jet carbureter is not popular at present, and even the improvement effected in the working of this type of carbureter by the addition of automatic extra air valves has not succeeded in prolonging its life greatly. This remark refers of course to the plain single jet, with no method provided of varying the jet opening otherwise than by the use of a reamer.

The present tendency in carbureter construction may be, I think, considered a two-fold one, namely, in the direction of the multi-jet type and in the direction of the single but variable jet-opening type. Though some of the constructions now in use still adhere to some kind of spring-controlled air valve, in others such devices appear to have been considered unreliable and to a large extent uncontrollable, and therefore hand control is depended upon.

The surface type of carbureter has few adherents, presumably its bulkiness and to some extent its wastefulness are perhaps chiefly responsible for its conspicuous absence. On the Lanchester cars of 25 and 38-horsepower a wick type is still in use, and a brief description of this appears later.

So thoroughly is the carbureter specialist tackling this problem, that not only is he constantly adding to efficiency and economy, but he is at the same time paying attention to accessibility, and now in some of the most carefully considered carbureters most of the important internal parts can be removed for inspection in a few moments and sometimes without the use of any tool. For example, in one carbureter that has not been many months

By J. S. Critchley

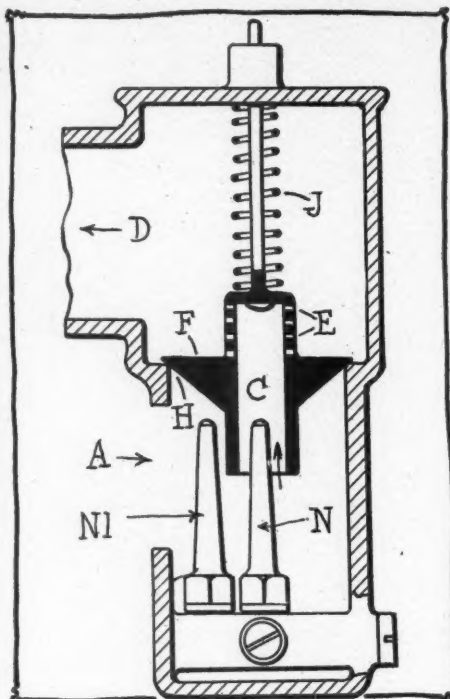


FIG. 1—LEWIS TWO-JET CARBURETER.

upon the market, the cover of the float chamber has a bayonet joint with a simple spring locking attachment; a slight twist, therefore, removes it and renders the float visible. The withdrawal of a single split pin permits the float to be removed. The fingers may be inserted in the float chamber and the large-diameter gauge filter can be lifted out. The jet itself is held gasoline-tight up against a conical seating by a flat spring only; one needs only to slip this spring out of engagement and the jet drops out into the hand, and it can of course be put back into place with no more labor. There are several other perhaps trifling details connected with this particular carbureter that might be mentioned, but the preceding facts will serve to indicate the attention that is being paid by some few of the best makers.

Some carbureters, too, have ingenious methods for varying the air flow and ingenious attachments for rendering the variation precise. With regard to the float chambers themselves there is little if anything more to report. The levers operating the needle valve are perhaps more usually in duplicate and are situated over the float. Occasionally, but not often, annular floats are used, the jets passing centrally through; the advantage of this arrangement being that an inclined position

does not affect the mixture quality and is not likely to cause an overflow when standing. Considerably more attention is paid to the problem of filtering the gasoline before entering the carbureter system at present than was the case a few years back. These filters have now usually considerably increased surfaces, so as to allow for a number of the meshes of the gauge becoming fouled without interfering with a free gasoline flow. In one case the filter extends entirely round the float-chamber.

Tickling devices for the float, in order to facilitate the starting up process, are now not so common, and indeed the superior controlling arrangements of the air supply render such devices totally unnecessary in most cases. Hot air is more commonly used than hot water as a warming agent for the carbureter internals, so that jacketed carbureters are not very frequently met with, nor is the exhaust gas heating system much in use. Having in view the fact that a maker has to adapt his carbureter to all sizes and types of engines, he usually spares no trouble to render his instrument adaptable. For example: The float-chamber perhaps may be on the right or on the left-hand sides, making the carbureter right or left-handed. The hot air intake is sometimes elastic as to its position. The throttle operating lever is adaptable to varying conditions; and in other ways is attention paid to the suitability of a carbureter to work under all sorts of conditions that may be required of it.

Having now given some general idea of what appears to me to be the tendencies in carbureter design, I will now proceed to briefly describe some of the well known types, more particularly as to their modus operandi, and assisted by a few diagrammatical sketches:

Fig. 1 shows the Lewis carbureter, which consists principally of a couple of jets and a sliding spring-controlled hollow valve. Air is drawn through opening A by the suction of the engine through the hollow valve C and the small holes E into the induction pipe of the engine D, inducing gasoline, which mixes with the air, from the spray nozzle N. This is the action at comparatively low speeds. Tendency to draw increased air lifts the hollow valve F, permits more air to pass, and this air acting upon the secondary jet N1 induces a further supply of gasoline, which passes into the induction pipe D of the engine. The action is a simple one. Constructionally, there is an interesting feature of this car-



bureter which lies in the fact that the base holding the twin jets is in the form of a door, through the hinge of which the gasoline passes to supply the jets. The door being opened exposes both jets for examination or removal.

Fig. 3 shows diagrammatically the Polyrhoe carbureter, and by the aid of this sketch I will endeavor to make the action clear. The pull of the engine creates a partial vacuum in D which at once causes the light flap valve E to open; thus is this partial vacuum communicated to H through the medium of the passage F. The piston is caused to move to the left and compress the spring in G, drawing the slide L, shown in both views, to the left; thus a certain number of the gasoline jets B are exposed and the air supply port A is opened out. Air and gasoline mixed intimately, due to the opening of a number of gasoline jets, pass along D to the engine cylinders. If the throttle valve C is pulled further to the right the result is to increase the vacuous tendency in D, and consequently the piston H, together with its slide, will move over further to the left, thus exposing still more gasoline jets, as well as permitting more air to pass. Closing up the throttle allows the spring to return the piston and slide to their original position and thus cut off the supply of both air and gasoline. In order that the air may be regulated independently of the gasoline the slide J—see plan view—is arranged to be moved by Bowden wire in the direction indicated by the double-headed arrow. This motion, it will be realized, makes the width of the air port A greater. One of the essential features of this carbureter is the method of obtaining the jet openings, more particularly so that they may be accurately gauged as to size. Thus the jet openings, instead of being circular holes, are actually slits in a plate which communicate with rectangular supply ports. Part of this plate is indicated at K. It is well known that there is no little difficulty in

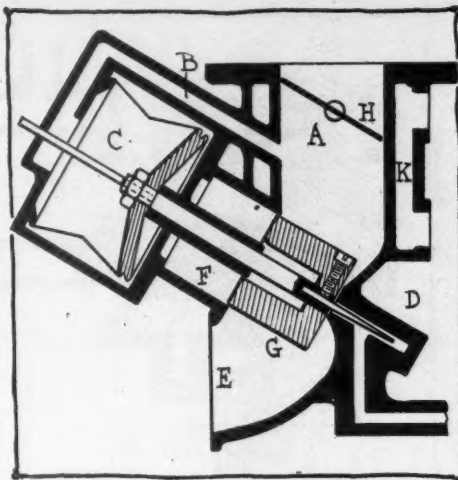


FIG. 2—THE S. U. CARBURETER

obtaining at all a constant liquid flow through a jet of much less than 1 millimeter in diameter, and the inventor of the Polyrhoe after a great deal of experiment has decided that slots, of the description just described, produce the most satisfactory and reliable results.

The S. U. carbureter, a sketch of which appears in Fig. 2, is a little peculiar in that the axis of the main working parts of the apparatus is not vertical but is inclined about 60 degrees from the vertical; the idea appears to be that the friction of the working spindle in its guide gives a damping action to the movement of the working parts. In this case we have only a single jet, but the effective opening of this is governed by a tapered needle D. G is a somewhat heavy piston attached to a spindle, of which latter the needle D is an extension; one side of a bellows C is fastened to the upper end of the spindle, the other side being fixed to the body of the carbureter, the passage G communicates the upper side of the bellows with the inlet pipe of the engine A. The piston G is guided in the chamber F. K is a waterjacket and H a throttle valve. The carbureter works in this manner: Any

partial vacuum in the chamber A is communicated through the passage B to the upper side of the bellows. Thus the bellows collapses somewhat and in doing so lifts the piston G to admit air into the chamber A and at the same time withdraws the needle D from the jet orifice somewhat, thus increasing the area of the annular through which the gasoline passes. The taper of the needle is such that the gasoline flow through the jet is in close proportion to the air flow past the valve G.

In the Solex carbureter, Fig. 4, we have a type in which a single non-adjustable jet is used, but it is supplemented by a subsidiary jet opening and air supply, which is used principally at starting, however. Under starting conditions the following action takes place: Gasoline flowing in through A passes this small needle valve shown and partially fills the float chamber B as is usual; gasoline also rises in the tube C and is capable of ejection from the diminution nozzle D. Now supposing the throttle valve E to be closed, there is no communication with the main air inlet L, but by means of a slot G there is communication between the inlet pipe H and the passage J as well as the opening F. The vacuous tendency produced by a slow revolution of the engine is communicated to the passage J as well as the tube C; gasoline therefore rises in this tube and becomes ejected from the nozzle D, and this gasoline mixes with air which is permitted to enter through the ball valve K. Thus is the starting mixture formed and it passes to the engine cylinder through the opening F, the slot G and the inlet pipe H. When the throttle valve E is opened, however, air passes through L and the choke tube M and induces a further and major supply of gasoline from the jet N.

The White & Poppe carbureter is a very popular one, and is in use by a number of well known firms, its economy and reliability having been thoroughly proved by both road and track tests. Here we have a

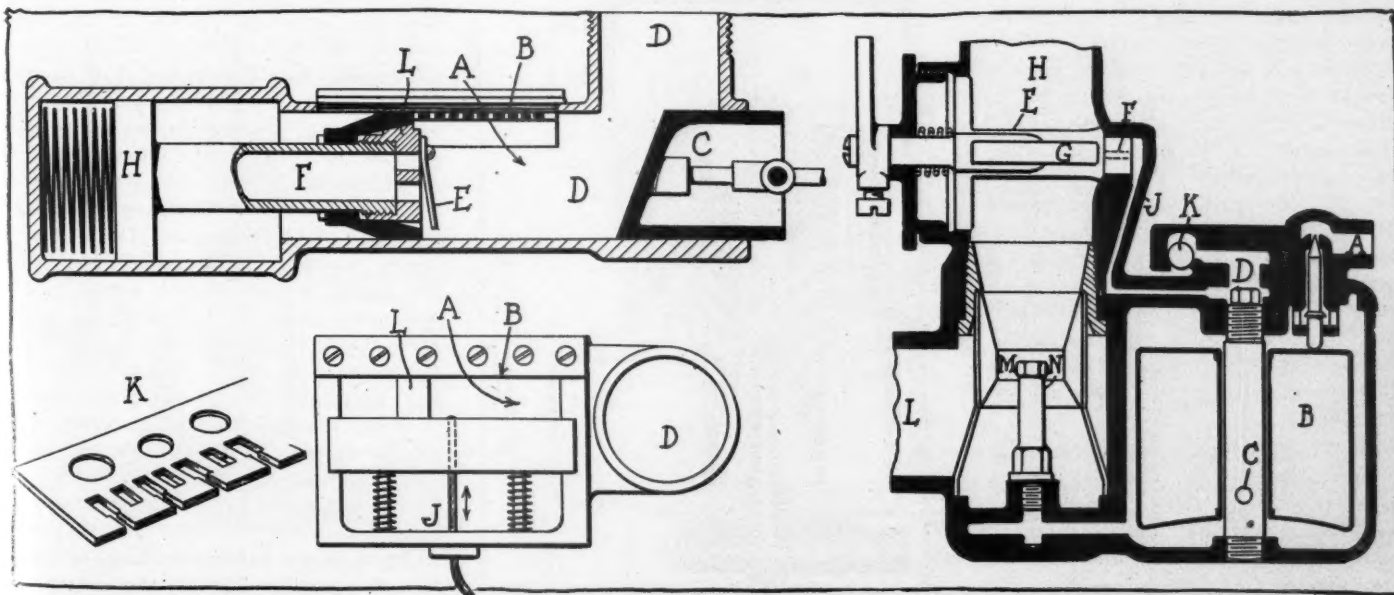


FIG. 3—THE POLYRHOE MULTI-JET CARBURETER

FIG. 4—THE SOLEX NON-ADJUSTABLE JET

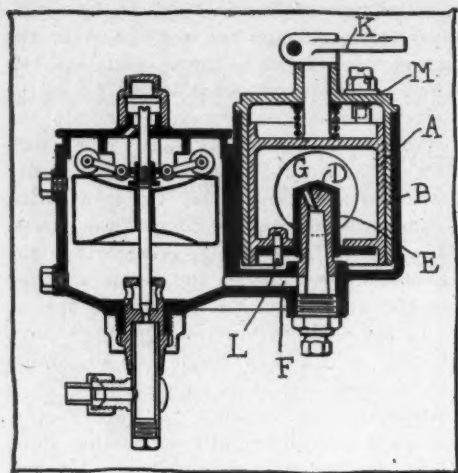


FIG. 5—WHITE &amp; POPPE CARBURETER

gasoline jet with variable openings, the variation being obtained by partial revolution about a vertical axis of a small sleeve, the movement of which synchronizes with the movement of a cylindrical partially-rotating valve. Referring to Fig. 5 it will be noticed that there are two shells, A and B, one within the other and a jet D communicating by way of the passage F with a constant-level float chamber. These are the essential parts of the carbureter. The inner shell A has attached to it by a screw L a small sleeve E, which fits the upper part of the jet. Now we come to the important feature of the instrument. The jet orifice is not drilled concentrically with the outer diameter of the jet, but somewhat eccentrically, and there is an opening of equal diameter G in the sleeves, so that in one position the two holes, the one in the jet and the one in the sleeve, exactly correspond. Now if the shell A is partially rotated by way of the lever K the small sleeve E must necessarily be rotated an equal angle as well, and whilst the effect of rotating the shell A is to vary the air supply, that of rotating the sleeve E is to vary the gasoline supply. In this simple manner are air and gasoline correctly proportioned under all condition. The purpose of the outer shell B has not yet been set forth: This shell serves to permanently vary the strength of the mixture by cutting down or increasing the air supply. In order to render the adjustment of this sleeve a fine one, a little spring lever, indicated by M, is furnished, and a pin on one end of this engages in one or other of a series of small holes, drilled suitably in the end plate of the shell. A movement of the shell in a clock-wise direction gives a weaker mixture, and the reverse is the case if the shell is moved in an anti-clockwise direction.

The Trier & Martin carbureter, Fig. 6, is an example of the three-jet type and displays a very clever embodiment of flexibility, economy and accessibility combined in one instrument. The three jets are at J. The ingenious manner by which these jets are rendered

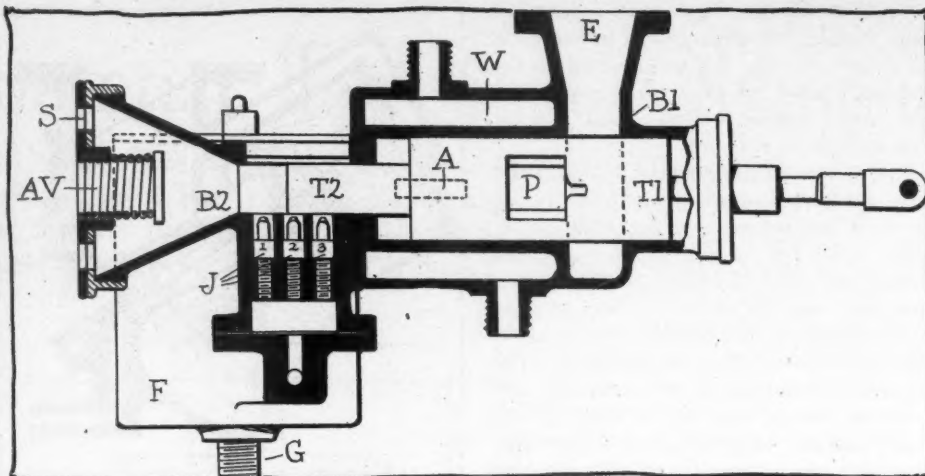


FIG. 6—TRIER &amp; MARTIN FLOATLESS CARBURETER

accessible by means of a small thumbscrew—attached plate is not indicated. These three jets discharge into a cylindrical passage, in which an extension T2 of the throttle valve and guide parts slide. As each jet is contained in a separate chamber, or recess, each one can be covered or uncovered by a suitable movement of extension piece. There are two other important details to note: First, there is a slot on the side of the carbureter, indicated at P, and the degree of opening of this slot is controlled by the cylindrical part T1, to admit more or less air as occasion requires. Secondly, a very ingenious extra air valve is fitted at AV, which consists of a close coiled spring with its inner end sealed by a metal disk, its outer end being open to the atmosphere. Any considerable vacuum tendency in the interior of the carbureter acts upon the sealed end of the spring by drawing it inwards, thus opening the coils of the spring and allowing air to pass. A most ingenious little valve this

and one that is not at all liable to stick. There is a further and constant supply of air through the regulatable slot A. A movement of the throttle valve to the right opens the way to the inlet pipe of the engine, uncovers one, two or more gasoline jets in succession and also exposes in some degree the side slot for the admission of air. Additional pull upon the carbureter opens the extra air valve AV.

There is still one other feature of this well considered carbureter to mention, namely, that at very slow running there is a bye-pass which draws air at high velocity across the second jet when the throttle is closed and this mixture is delivered to the engine side of the throttle valve by means of a small tube passing through the packet. It has not been possible to show this detail in the illustration.

The Zenith carbureter is a popular one. A view appears in Fig. 9. The gasoline jets C and K are in duplicate, but instead of being placed side by side as in the Lewis carbureter, they are placed one within the other. The inner jet C behaves in the usual manner, that is, at high speed there is a tendency for the engine to draw an excessive supply of gasoline through this jet. It is the purpose of the outer annular jet K to correct this tendency. The small vertical chamber A is in communication with the float chamber by way of the gauged orifice G, which permits gasoline to flow into it—the chamber—at a predetermined rate. A gauze covered opening H permits atmospheric communication to this chamber A. The action of the apparatus is in this wise: At fairly low speeds both the jets C and K are in action, the inner jet C drawing its supply from the float chamber and the outer jet K receiving its supply from the small vertical chamber A. Upon any great increase of speed a proportionately excessive supply of gasoline is drawn from the jet C. Just at first the same tendency occurs with regard to the jet K; but this tendency is counteracted by the fact that the small orifice G is not sufficiently large to maintain the gasoline level in the chamber A at high speeds. Thus the volume of gaso-

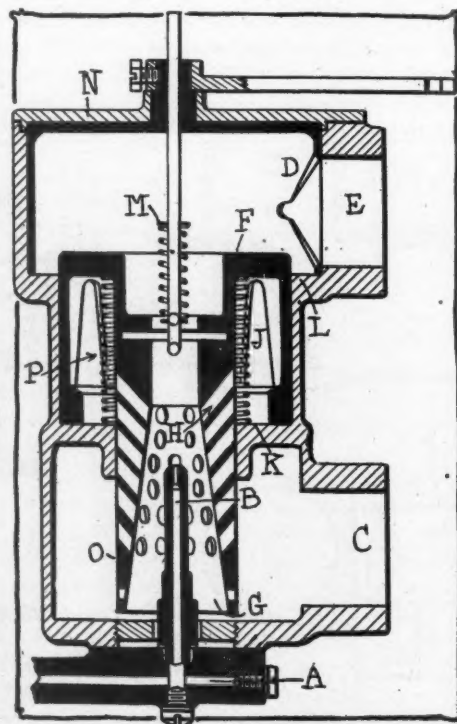


FIG. 7—THE ROVER 1912 CARBURETER



line flowing through the outer jet K is actually less at high speeds than at low speeds and, therefore, the opposite tendency displayed by the jet C is ingeniously corrected. The small tube D is employed for starting purposes; gasoline rising to the same level in the chamber A as in the chamber B immerses the lower end of the tube D; thus at starting when the throttle valve is only just open gasoline is sucked up this tube and immerses from the small opening shown into the inlet pipe of the engine E.

Fig. 7 shows the somewhat peculiar construction of the Rover carbureter. The choke tube O is a conical perforated sliding one, and there is one jet only. Air enters at C in the direction of the arrow G up the tapered choke tube and through a proportion of the series of holes H into an upper chamber. From here the air passes by way of the slots J into a chamber which forms the interior of the throttle valve D. Meanwhile, gasoline and a certain proportion of air pass up the central opening in the sliding choke tube. A spring M serves to cushion a too violent upward movement of the sliding sleeve, as when the throttle valve is suddenly opened. It will be understood that the motion of the throttle valve is a partially rotating one. The working principle of the carbureter is ingenious, thus when an increased suction in the engine inlet pipe lifts the sleeve O, a greater number of the inclined holes H are opened up to feed mixture by way of the ports J into the inlet pipe. It will be clear that the effect of this action is to counteract the tendency at high speeds to produce a greatly increased suction effect in the immediate neighborhood of the jet opening, precisely where such an increase is at high speeds harmful. It should be mentioned that the piston F, with its choke tube O, is of such weight that when partially supported by the spring P it just balances the suction of the engine.

The Claudell-Hobson carbureter, Fig. 8,

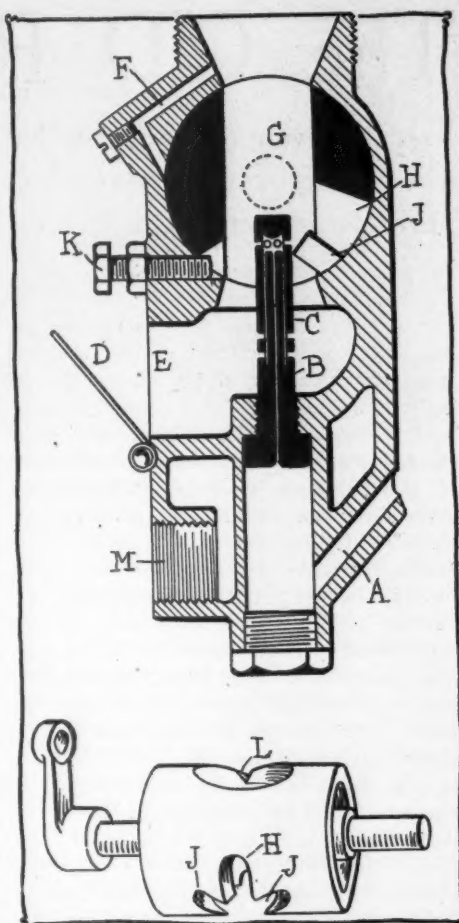


FIG. 8—THE CLAUDELL-HOBSON MANY-JET CARBURETER

has a jet of peculiar construction. The single jet B has a cap or sheath C perforated top and bottom as shown. Air passes in through the small holes at the bottom and makes its exit together with a finely divided gasoline spray from the upper group of holes. Under starting conditions the throttle G is closed, but its position is such that the small passage F remains open and as the flap D closes the main air inlet a very strong mixture is sucked through this hole. After the engine

has started the flap D is opened and the mixture passes up through the throttle valve G, the passage F being subsequently cut off. A small slot H, shown in the small illustration, next comes into operation, and this is followed by the opening of the peculiar-shaped stops J and J shown in the small illustration, which have been the result of careful experiment on the part of the manufacturers. L is a diminutive notch cut in the throttle which allows sufficient mixture to pass when the engine is running dead slow.

In Fig. 10 appears a view in section of the Lanchester wick-fed carbureter. It is practically self-explanatory, but it may be remarked that a position pump lifts the gasoline in the main tank into the wick chamber. A greater rate of flow than is actually required for use in the engine and an overflow pipe is fitted. Hot air passes up in close proximity with the wicks and subsequently mixes with cold air before passing to the motor.

#### THE WORK OF ENGLISH ROAD BOARD

London, Oct. 27—The first annual report of the road board has just been issued. This is a very interesting document and shows that it has not spent its available funds in any reckless fashion, as out of an available amount of \$6,750,000 it has only allotted some \$1,300,000. The revenue is derived from two sources, namely, a gasoline tax of 6 cents per gallon and motor car licenses, and the amount actually credited to the road improvement fund for the years 1909-10 and 1910-11 totals \$5,806,720, made up by gasoline duty, \$3,505,395, and licenses, \$2,301,325. The policy of the board is to distribute its grants widely, in endeavoring to help those local authorities who really want to carry out road improvements on a scientific and proper manner. Initial steps have been taken for establishing a laboratory for testing, experimental and research work in connection with road materials.

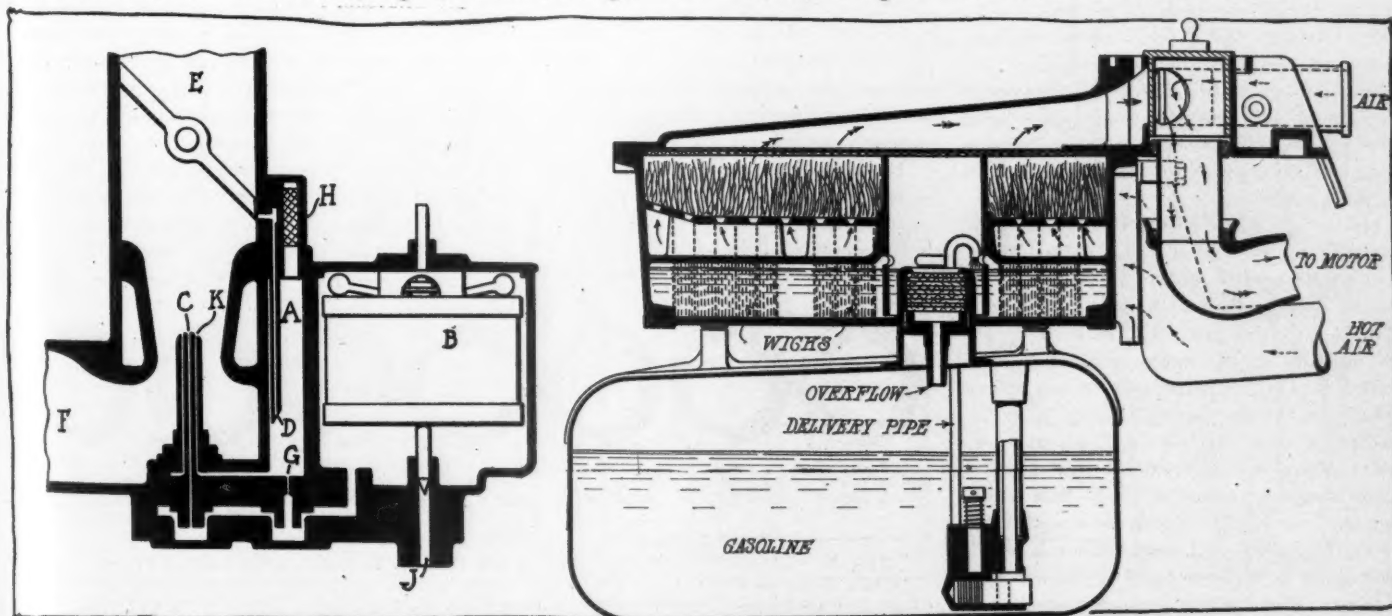


FIG. 9—THE TWO-JET ZENITH CARBURETER

FIG. 10—LANCHESTER WICK-FED CARBURETER

# The CID Rotary Valve

French Invention Brought Out a Year Ago Shows Many Improvements for Next Season

and exhaust ports, are shown in Fig. 3, in which A indicates the intake and E the exhaust port. Gas-tightness is assured by the extensibility of the sleeve, and as this latter is free to be expanded, the greater the pressure the closer the contact with the cylinder walls, and in consequence the less likelihood of leakage. Variations of this principle have been adopted by other European makers with more or less success. In one case a complete rotary sleeve is employed; in another a short split ring has a reciprocating motion, and in another a dome-shaped distributor in the head of the cylinder has an oscillating motion, allowing it to cover and uncover intake and exhaust ports diametrically opposed. The vertical spindles driving the sleeve-valves for the four cylinders pass through the heads of the cylinders into a separate housing containing the horizontal shaft, Fig. 5, on which are mounted four helical pinions A1, each one meshing with a pinion G on the extremity of the vertical spindle for each cylinder. The overhead shaft A is driven by worm gearing and a vertical external shaft B on the left-hand or exhaust side of the motor. The worm is mounted on the center of the crankshaft, this organ being carried on two bearings only, and the lower end of the vertical spindle is extended downwards so as to drive the oil pump OP in the base of the crankchamber. Obviously this arrangement avoids the use of timing gears and a timing gear housing at the front of the motor, as in standard poppet-valve design. The external vertical spindle is driven off the mainshaft at motor speed, the horizontal overhead shaft is also run at motor speed, the reduction of 2 to 1 being made between this latter and the spindles of the sleeves. In order to obtain a correct balance the alternating sleeves turn in opposite directions.

It has been pointed out that gas-tightness around the intake and exhaust ports is obtained by the extensibility of the split sleeves. The spindles driving the

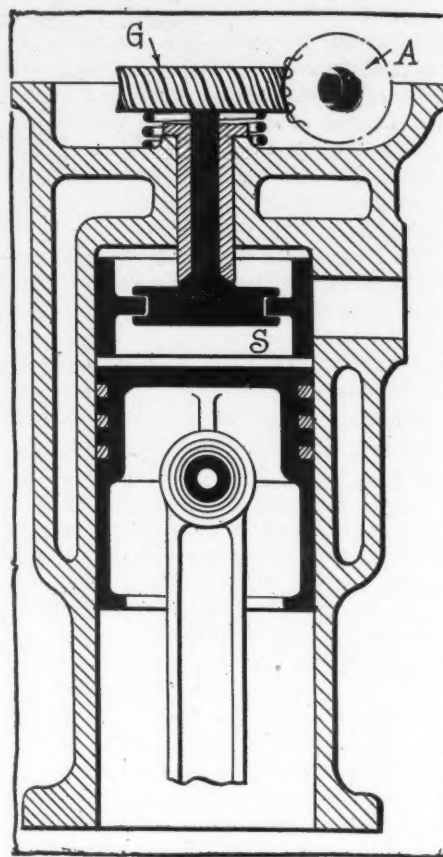


FIG. 2—THE CID ROTARY VALVE  
This illustration shows the valve S mounted in the top of the cylinder immediately above the piston. It also shows how the valve is driven by the overhead gearing

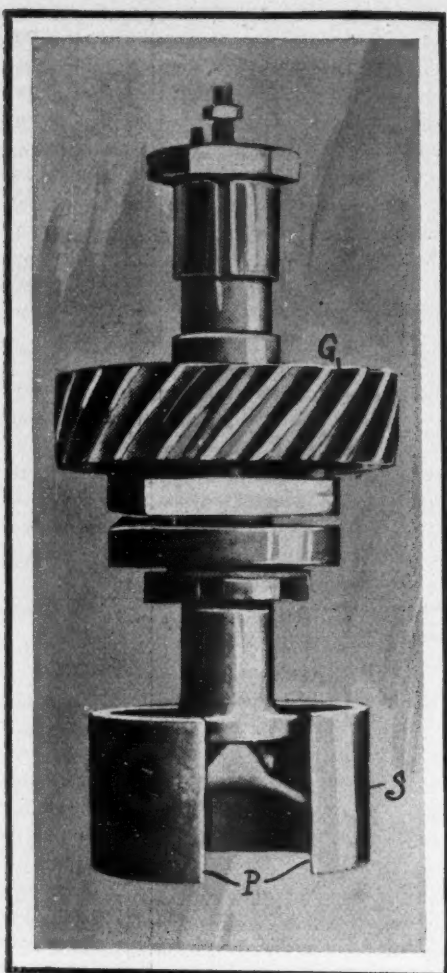


FIG. 1—CID ROTARY VALVE

This illustration shows the CID rotary valve as a broad ring S with a vertical slot P in one side which registers with the intake and exhaust openings

HAVING been presented in its primitive condition at the last Paris show, the CID sleeve-valve motor, now being placed on the European market, has had the advantage of 1 year's practical road experience. Since it was first offered to the public the motor has changed its name and has also been considerably modified in details, although the general design remains the same. It is now being produced by the Constructions Industrielles Dijonnaises in one model only, having four cylinders of 75 by 120 millimeters, 2.9 by 4.7 inches bore and stroke, with a nominal rating of 12 horsepower.

In the CID motor the sleeve, in each cylinder which serves as a valve, has a continuous rotary motion of one-half the engine speed. Fig. 1 shows this sleeve S attached to the gear G, which drives it. Its position in the cylinder head is illustrated in Fig. 2, which shows the sleeve occupying the top part of the cylinder immediately over the piston head, and the gear taking its drive from the shaft A lying along the cylinder head. The sleeve has but one port P, which covers and uncovers the intake and exhaust ports, which are placed in opposite sides of the cylinder casting. The various positions of the revolving sleeve, in relation to the intake

sleeves each passing through the head of the cylinder into the overhead timing gear housing, gas-tightness is secured at this point by means of a cone seating D at the base of the spindle. The sleeve is a deep split ring having a considerable gap and having on its inner face a couple of tongues, Fig. 4, at opposite points, allowing it to be fitted into grooves on the two ends of the transverse arm of the spindle. This, while providing the necessary contact for driving the sleeve, gives to the latter the free movement necessary for contraction and expansion to assure gas-tightness. The method of coupling the portion of the spindle carrying the sleeve with the positively-driven spindle operated from the transverse shaft is also interesting.

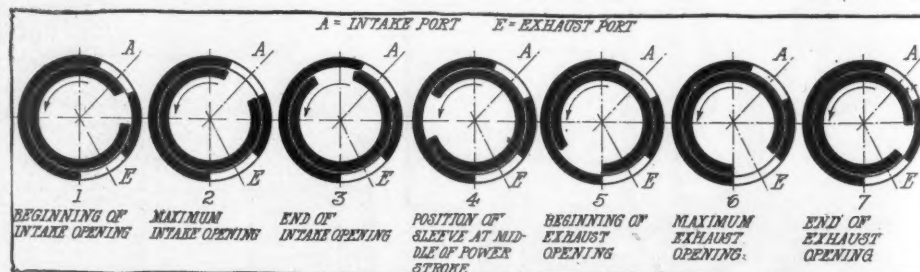


FIG. 3—DIAGRAM SHOWING POSITIONS OF CID INTAKE AND EXHAUST PORTS  
In this motor in order to get the proper timing for the intake and exhaust the intake and exhaust ports are located at approximately 90 degrees to each other. The rotating sleeve S of Fig. 1 is shown inside of the circle representing the cylinder wall. The arrow shows the direction in which the sleeve rotates.



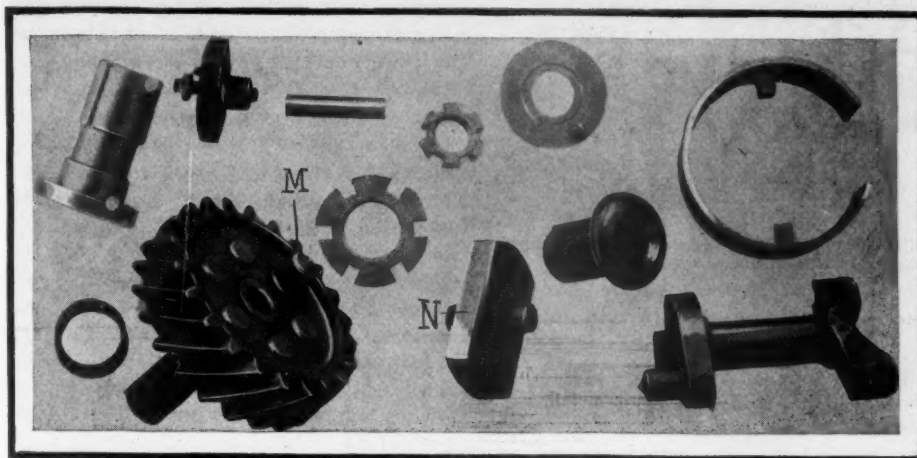


FIG. 4—THE SEPARATE PARTS OF THE CID ROTARY VALVE DEVICE

Projecting from the lower face of the driving pinion is a stud M receiving the cross arm of the coupling, and on the opposite end of this arm is a hole intended to receive the stud on the cross arm N of the lower portion of the spindle. When the timing gear housing is removed, together with the horizontal shaft and the magneto, it leaves exposed the top of the cylinders with the four projecting spindles and the couplings, each one having a hole into which the stud on the driving pinion is passed. To get the correct timing after dismounting it is only necessary to line up the four couplings to a mark across their faces.

The high-tension magneto is carried on a platform bolted to the rear extremity of

the timing gear housing and driven directly off the overhead horizontal shaft, the distributor terminals passing through the dashboard into a glass-faced casing on the driver's side. Within this casing is also contained the gasoline gauge, the oil level and a cut-out switch passing through the glass, the rest of the dashboard being left absolutely clear. The sparking plugs are mounted on the intake side of the motor just above the sleeve.

The method of lubricating this motor is a combination of the pressure and circulating systems. The lower portion of the crankchamber forms an oil tank, from which the lubricant is carried by the pump to the timing gear housing on the top of and running the full length of the

motor. The overflow from this chamber flows within the housing on the left-hand side of the motor containing the vertical shaft and is directed through internal leads to four troughs under each of the connecting rods. No oil is carried directly to the sleeves, these being supplied by splash in the same way as the cylinder walls. In addition to carrying the oil to the timing gears, there is an independent lead providing for the lubricating of the two main bearings under pressure. The casing of the vertical spindle spoken of as connecting the crankshaft with the overhead shaft not only serves to carry the oil back to the troughs but is also made use of as a filler and as a crankcase breather. Oil poured in through the cup-shaped top flows down to the base of the crankchamber, and owing to its height and the absence of any cover, forms a most convenient filler.

#### NO BOSTON TRUCK SHOW

Boston, Mass., Nov. 5—There will be no outdoor show or run by the dealers who handle the commercial vehicles in Boston this year. For some time it was believed that there would be something of the sort arranged but as the weeks went by the interest seemed to die out and now that the cold weather is here and a regular motor show for commercial vehicles scheduled for March following the pleasure car show the other plan has been dropped by the local association.

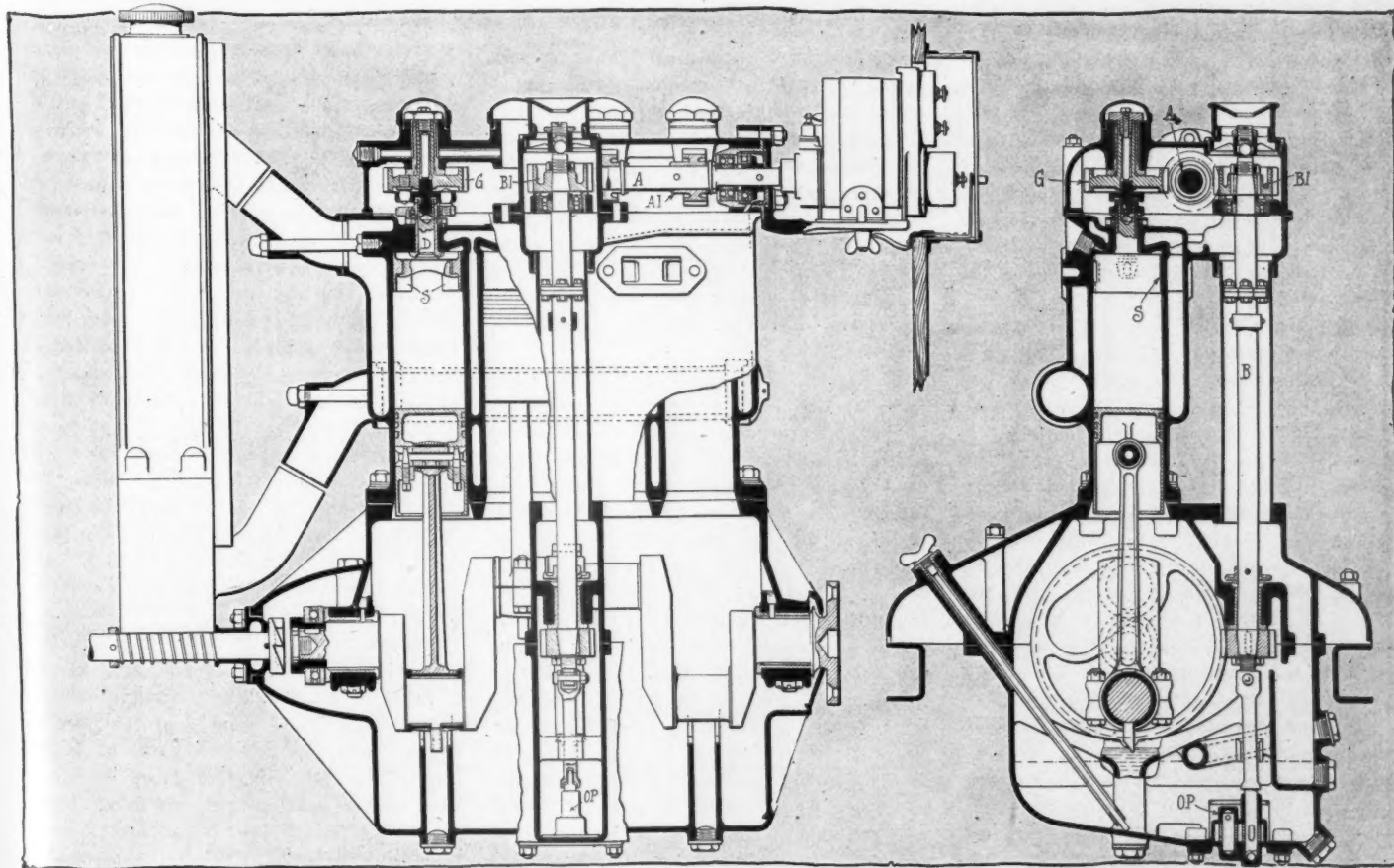
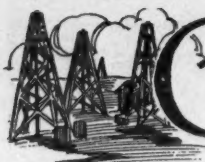


FIG. 5—SIDE AND END SECTION OF FOUR-CYLINDER MOTOR WITH CID ROTARY VALVE

An economy of parts is shown by having the vertical shaft B which drives the oil pump OP also drive the horizontal shaft A on the cylinder head, which shaft in turn rotates each of the valves in the four cylinders. Through the gear G on the top of each valve spindle



# Gasoline



**By Petroleum**

Article II

IN our last article in Motor Age, November 2, 1911, page 18, we promised to take up later the relative value of different gravities. As previously stated, there are more pounds in a gallon of low-gravity gasoline than in a gallon of high-gravity gasoline, and since we purchase by the gallon, we get more for our money in the low gravity than in the high. But, you will object, this is only true provided the quality is equal. You are right, and we will dispose of this later, but for the moment let's assume that pound for pound they are equal. Then it is self-evident that there is more value in a gallon of low-gravity gasoline, and this raises the question, Why is not gasoline sold by the pound instead of by the gallon?

In the case of coal, it would be absurd to sell it by the space occupied instead of by the ton. For instance, a ton of hard coal would occupy 35 cubic feet, a ton of soft coal 45 cubic feet; so that if the cubic measure of a ton of hard coal were used as a standard, you would get only 7/9 of a ton of soft coal. This clearly would not do. We want our full weight, regardless of the space the fuel occupies, because we know that every pound has a certain number of heat units, and it is heat units we are buying. But if the mine owner were foolish enough to give us the number of cubic feet occupied by a ton of soft coal as a standard for a ton of hard coal, we would not kick, because we would get more pounds, more heat units, and we would be ahead of the game. So, as long as the refiners are willing to sell by the gallon, we have no grievance, but it should be our business to see that we get the gallon that has the most pounds in it.

## We Buy Heat Units

But this question of quality has not been disposed of. To simply state the fact that there are 20,000 heat units in every pound of petroleum products, regardless of gravity, does not cover the point. Of course it is true the more pounds we get the more heat units we obtain, and heat units are what we are buying, whether it is coal or gasoline we purchase. Heat is power in either case. It is this that makes hard coal worth more per ton than soft coal. It has more heat units per pound. Then this is our proposition: Given two gasolines of different gravity, both of which meet other requirements, we will take the low-gravity gasoline every time. We are agreed on this. There is no room for argument. But what are the other requirements?

Engine builders have so improved their motors; carbureter manufacturers have

made such advances in atomizing and vaporizing gasoline that the refiners must surely have kept pace with them, and we find they have. What were once problems are no longer so. About the only thing in regard to which we hear much complaint is in connection with starting the car, so that for the time being we can assume that if a gasoline will start quickly, and has plenty of power, it meets all reasonable requirements. We know the heavy-gravity gasoline has more power than the light—this is told by the heat units—but will it start as quickly? This brings us back to our starting point. You will remember we stated that we were puzzled over the performance of different gasolines made in different sections. It was mainly on this matter of starting. Pennsylvania gasoline of 66 gravity will start as quickly, but no quicker, than a 58 to 60-gravity Kansas gasoline, but a 60-gravity Pennsylvania gasoline would not do at all. On the other hand, the 58-gravity Kansas gasoline gave more power, would produce more mileage, but 66-gravity Kansas gasoline was no better, if as good, than the same gravity Pennsylvania gasoline. Then this is the deduction: gravity is a guide if applied to a particular field, not absolutely, as will be explained later, but a guide nevertheless; but whatever the field may be from which the goods are drawn, our effort should be to get the lowest gravity gasoline produced from that field that will start a car. Over and above the fact that we get better value by so doing, we are aiding in the conservation of a fuel that will some day be scarce, however plentiful it may be today.

The refiners may be interested in this—it is hoped they are—and the manufacturers of motor cars have a vital interest in the maintenance of a cheap and plentiful supply of fuel, but more than these, the car owner, the one who pays the bills, is, or should be, interested. It is his pocketbook that will be affected. If this article serves no other purpose than to bring this point home, it will have been worth the effort. We shall not burden you with a lot of statistics, but our investigation discloses the fact that if all the refiners were compelled to furnish gasoline of 66 gravity or higher, the total production for the United States would be just one-third what it is today. Can you conceive what this would mean to you, Mr. Manufacturer, or you, Mr. Consumer? Somebody would stop making motor cars, and some people would stop

buying them, and two-thirds of those now in use would not be run. And this is not all: we would be paying three times what we are now for a product not so good. The situation would be almost as bad if the refiners were compelled to supply only 63-gravity gasoline. This would cut the production in two, and we would have to pay twice what we do now.

It is immaterial to the refiner whether he gets 10 cents per gallon for 300,000,000 gallons, or whether he gets 30 cents per gallon for 100,000,000 gallons—the net return is the same to him—but if we force him to produce less gasoline because we are foolish enough to insist on high gravity, he, in turn, is compelled to charge enough more for the reduced quantity produced to make up for the loss in the sale of his by-products.

We hold no brief from the refiners, but in fairness it should be said that they have done their share in increasing the production and keeping the price down. But enough of this. We all know, he who dances must pay the fiddler.

## WILL INVESTIGATE VALUATIONS

Brussels, Oct. 20—The Belgian Automobile Board of Trade has recently sent a petition to the finance department of Belgium asking that the proper authorities be directed to see to it that the laws governing the importation of foreign-made motor cars be more strictly observed in this country.

Some Belgian agents claim to know customs frauds have been going on and that a good many chassis have been passed by the customs house upon the valuation given by the interested parties and without these valuations being checked up. A local dealer claims that in one instance a rival who handled a foreign car has thus been importing his chassis at a value of more than 50 per cent under the real price. An investigation will likely be started by the government.

During the first 6 months of this year the importation of foreign cars into Belgium has not been as heavy as during the corresponding period of 1910. Instead of sending 192 cars of a total value of \$220,390 as during the first 6 months of 1910, the French manufacturers have sold only 108 cars valued at \$123,087 during the first 6 months of 1911. Great Britain's exports to this country during that same period dropped from twenty-four cars valued at \$30,490 to sixteen cars valued at \$16,597.

Exports from the United States have increased this year, nineteen cars, having a value of \$11,938, being brought to this country the first 6 months of the year as against only one car of a value of \$1,300 last year. The imports from Germany have nearly trebled, thirty-six cars, valued at \$44,517, being imported as against thirteen of a value of \$20,740. Austria also has found favor here as seventeen of its cars were imported as against only one



during the similar period last year, the value representing \$17,100 as against \$1,800.

Taking into consideration the average value of the imported cars it is shown that the American product was by far the lowest in price, \$628 being the average while the only car from the United States recorded to have been imported during the first 6 months of 1910 was valued at \$1,300. The average price of the Austrian car is thus far this year \$1,006 as against \$1,800 last year. The value of the British-made car is \$1,037 as against \$1,270 last year. The value of the average French chassis is almost the same as last year, being \$1,140 or \$7 less. The average price of the German chassis which was \$1,595 last year is of only \$1,236 thus far this year.

Just at present there is no more talk of urging the government to increase the duty on foreign cars, but it is not unlikely that at one of the next meetings of the Belgian Automobile Board of Trade the matter will again be taken up. The manufacturers are beginning to feel rather anxious at the foreign invasion and although it is not specifically mentioned these fears are specially directed at the Germans.

During the last 3 years the motor car manufacturers from Germany have taken part in most all the important Belgian sporting events and in all they have been either winners or among the leading winners. Dealers say without hesitency that to these successes are due the increasing demand for German cars. On the other hand hardly any French cars have taken part in important events in this country during the last 2 years, excepting the annual Ostend road race.

The importation of foreign motor car parts shows an increase of nearly \$100,000 over the corresponding period of last year. Here also the increase of business of the German manufacturers is very striking. Last year during the first 6 months this item represented in value \$36,139 while this year this value is recorded at \$79,698. The imports from France, which totaled past \$300,000 last year, show a decrease of about \$4,000.

#### CLUB ACTIVITY IN DETROIT

Detroit, Mich., Nov. 5—The Wolverine Automobile Club is making arrangements for its third under sealed orders run next Sunday, the officials having mapped out the route yesterday. The trophy for this run will be donated by Robert K. Davis, of the United Motor Detroit Co. C. A. Smith, driving a Hupmobile, was the winner of the second run, a week ago. He came within 4 minutes of the official time, which was 6 hours 39 minutes, an average of 13.28 miles per hour. The itinerary included Orion, Royal Oak, Pontiac and Rochester. The running was ideal.

Members of the club are getting up a party to motor to Savannah, Ga., to attend the road races there the latter part of the month.

# The Motorists' Bookman

## Dictionary of Aviation

ROBERT Morris Pierce has chosen a dictionary of the terms used in the new field of aviation as a vehicle for airing his ideas of "fonetic" spelling. So far as the definitions and etymology of the words are concerned, the author leaves nothing to be desired, and in the 267 pages he has covered practically every technical word or phrase connected with the art at present. The number of meteorologic terms is larger than might seem necessary, but this is explained by the statement that there apparently exists no dictionary of meteorology, and it is admitted that the subject is of great importance in aviation.

In view of the thoroughness with which the field of aviation and the broader one of aeronautics are covered in the work, it is a pity that its usefulness for the ordinary man has been curtailed by the employment of a bizarre system of orthography which the author calls "clarified spelling." This consists in the use of unusual letters to represent the varied sounds normally given the English letters. In one word there may be German, Greek and inverted English letters, inverted numerals and an arbitrary sign or two that have no connection with ordinary usage. To be sure, the worst cases of this very unusual orthography occur only in the respellings of the words, and are seemingly inserted for purposes of pronunciation. Consequently, if the reader does not wish to learn a new alphabet, he can skip the respellings and manage to decipher the meanings of the words from the less unique type of the definitions. Baker & Taylor Co., New York.

## Society of Automobile Engineers

"Transactions, 1910," volume V, is the title of the latest publication issued by the Society of Automobile Engineers, New York. The various papers read and under discussion at the 1910 meetings of this society are incorporated, some of the subject titles of which are: Making gears quiet by grinding; graphical determination of change-speed gear loads; cork inserts as applied to machinery used in the manufacture of motor vehicles; characteristic curves of internal combustion motors; carrying of tools, spare tires, and supplies on the car, etc.

## Motor Car Law

To maker and owner alike the legal status of the motor car is of paramount interest, and one of the latest publications on the legal aspect of the car is the "Law of Motor Vehicles," by Berkeley Davis, of the District of Columbia bar. In his preface the author says, "When the first self-propelled vehicle made its appearance upon the highway, lumbering heavily along, emitting great clouds of smoke and

vapor, and producing a clatter and clang that aroused the nymph Echo to protestation, there was no trace of doubt in the mind of the community that the contrivance was a nuisance, a public nuisance. They straightway indicted the man who was responsible for this outrage; and the court reflecting public opinion directed a verdict for the fellow whose ancient horse, frightened into fits, frisked across fences and ditches, leaving the contents of its vehicle strewn in its wake. Galileo, for his pains in scientific discovery, was cast into a dungeon, if not put to torture, as some assert. And so the world goes on: yesterday's nuisance or heresy is today's necessity or tenet. Motor vehicles have established themselves in the public estimation, and in the more progressive communities a person may operate one of a proper character and in a proper way without incurring legal liability. But what is a 'proper' vehicle? And what is a 'proper' mode of operation? The answers to these questions are to be found in the opinions of the courts and in the enactments of the legislature," and it has been the author's aim to segregate these answers in a comprehensive book on the entire law of self-propelled vehicles as determined by the decisions of the courts.

Some of the topics dealt with are: Regulation of use of motor vehicles, mutual rights and duties of operators of motor vehicles and others on highway, condition of highways with respect to motor vehicles, injury to highway or appurtenances or adjoining property by motor vehicles, owner's liability for negligence of driver, garages and garage keepers.

English and Canadian decisions are included, many of which, the author claims, bear on points not yet adjudicated by the American courts; there are also cases relating to traction engines and road rollers; and the appendix gives the general motor statutes of all the states and territories, the District of Columbia, the Canadian provinces, and England. The subject of the law of aviation, which ere long will be a matter of serious consideration, is given a chapter, the author presenting to the public the views that have already been expressed on the subject. This book of 774 pages comes from the press of Edward Thompson Co., Northport, L. I., N. Y. Price, \$5.

## RACE AT LAUREL, MD.

Washington, D. C., Nov. 4—The feature of the closing day at Laurel, Md., where horse racing has been in progress for the past month, was a 10-mile motor car race, which was won by a Warren-Detroit, driven by I. C. Barber, in 12 minutes 22 seconds. Cleveland Campbell, in a Cole, was second, and Napoleon Hill, in a Washington was third.



# Routes and Touring

## CLIMB TO LICK OBSERVATORY

**T**O motorists seeking a delightful variety of scenery, and to those who like the sensation of ascending into the higher atmospheres the trip up to the Lick Observatory on the summit of Mt. Hamilton is recommended. Not only is the journey by motor car to the apex of this famous mountain enjoyable on account of the scenic beauty and its rarified and clear air strata, but because it is one of the most instructive one-day motor car tours in California. It is instructive from so many standpoints that if the motorist who makes the ascent is not fortunate enough to make the trip by night so as to view the stars through the monster telescope he will still have absorbed such information that he will always remember the journey as one of considerable educational value.

Contrary to the general impression that the trip up Mt. Hamilton is a difficult one, it can be made with ease in one day. The nature of the road up the mountain, which is good all the way, makes careful driving imperative and also calls for rather skillful driving, as the grades vary, almost constantly from 5 to 9 per cent and the turns are so many and mostly extremely sharp, that one must keep his wits about him to get the highest possible efficiency out of his car at all times. The route is extremely simple, as the beaten trail from San Francisco to San Jose is followed. San Jose is 50 miles south of Oakland and connected by excellent roads, and through the latter city access is had to and from San Francisco, by the inner harbor ferry route. Ample accommodations are provided

for conveying motor cars across the bay. Upon arriving at the Garden city, the route continues direct out Santa Clara avenue into Alum Rock avenue, beyond the cemetery and on to Mt. Hamilton road, which turns sharply to the right at a point just a trifle over 5 miles from the electric tower in San Jose. Before leaving San Jose, motorists should make sure that their oil and gasoline tanks are full, because from the moment the Mt. Hamilton road is reached the grades commence, and from there on to the summit, a trifle under 20 miles, it is practically a constant climb. At only two or three places between the beginning of the Mt. Hamilton road and Smith's creek are there down grades for short distances.

Smith's creek is about 18 miles from San Jose, and at an altitude of 2,100 feet, just half of the altitude of the summit of the mountain, which is 4,209 feet. In the remaining ascent into the clouds, the grades average from 7 to 10 per cent. It is claimed that there are 365 turns between Smith's creek and the Lick Observatory. Water is scarce along the road, there being but one watering trough between Smith's creek and the summit. This climb from Smith's creek is very interesting. Mountains across the valleys to both right and left of the road seem to be dropping down into the valleys, so steady is the climb.

## EN ROUTE FOR MIAMI, FLA.

Kalamazoo, Mich.—Editor Motor Age—Will Motor Age please give me the best route from Kalamazoo to Washington, D. C., and from there to Savannah, Ga.,

thence to Miami, Fla. I want to make this trip and have a small car. I desire to go as near the ocean as I can, and still I want good roads. I have never traveled any to speak of with my car, and all suggestions will be highly appreciated.—J. E. Cheney.

Doubtless you have been interested in the Glidden tourists in their trip from New York to Jacksonville, Fla., October 14 to 26. Motor Age published an account of each day's run in the October 19 and 26 issues, and particular attention was given the road conditions. There have been exceptionally hard rains, and the roads are in bad shape. They took the main traveled road, and, although they experienced difficulties, Motor Age would not advise anyone to abandon a like trip on this account, for in the long run everything else in the way of an educational nature and scenery counterbalance these stretches of bad roads.

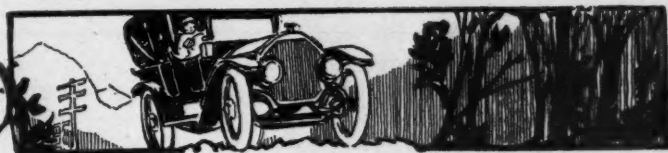
From Kalamazoo motor to Ypsilanti, 110.3 miles, through Galesburg, Battle Creek, Cresco, Marshall, Albion, Parma, Jackson, Grass Lake, Chelsea, Lima Center, Ann Arbor and Ypsilanti. If you want to go to Detroit it will take you 29.5 miles further east through Denton, Canton, Wayne and Dearborn, but you will have to return to Ypsilanti for Toledo, in order to travel over the best road, which is Stonycreek, Milan, Azalia, Dundee, Ida and Toledo. The Toledo to Buffalo routing is as follows: Toledo to Cleveland, 119 miles; Woodville, Fremont, Clyde, Bellevue, Monroeville, Norwalk, Wakeman, Kipton, Oberlin, Elyria, Ridgeville, Cleve-



DOME OF LICK OBSERVATORY AT SUMMIT OF MOUNT HAMILTON, AND ROAD SCENE ABOUT 2 MILES AWAY



# Information



land. Cleveland to Erie, 102 miles—East Cleveland, Euclid, Wickliffe, Willoughby, West Mentor, Mentor, Painesville, Madison, Unionville, Geneva, Saybrook, Ashtabula, Kingsville, Amboy, Conneaut. West Springfield, East Springfield, Girard, Fairview, Erie. Erie to Buffalo, 93 miles—Northeast, Ripley, Westfield, Portland, Brocton, Fredonia, Silver Creek, Irving, Evans, Buffalo. The popular road to New York is Rochester, Syracuse, Utica and Albany. Buffalo to Rochester, 71 miles—Bowmansville, Mill Grove, Crittenden, Corfu, Batavia, Byron, Bergen, Churchville, North Chili and Rochester. Rochester to Syracuse, 88 miles—Brighton, Fairport, Macedon, Yellow Mills, Palmyra, Newark, Lyons, Lock Berlin, Clyde, Savannah, Montezuma, Port Byron, Weedsport, Eldbridge, Camillus, Syracuse. Syracuse to Utica, 50 miles—Fayetteville, Mycenae, Sullivan, Canastota, Wampsville, Oneida, Vernon, Kirkland, New Hartford, Utica. Utica to Albany, 95 miles—Deerfield, West Schuyler, Herkimer, Little Falls, St. Johnsville, Palatine Bridge, Spakers, Yosts, Fonda, Tribes Hill, Aiken, Amsterdam, Scotia, Schenectady, Albany. Albany to New York—Cedar Hill, Coeymans, Ravena, Coxsackie, Athens, Catskill, Cementon, West Camp, Evesport, Malden, Saugerties, Glenerie Falls, Kingston, Wilbur, Eddyville, Esopus, Rifton, New Paltz, Modena, Plattekill, Newburgh, West Point, Highland Falls, Fort Montgomery, Tompkins Cove, West Haverstraw, Haverstraw, New City, Nanuet, Nyack, Tarrytown, Irvington, Yonkers, Columbus Circle, New York. The Glidden tour route can be followed from New York to Jacksonville, and one of their route books can be purchased for \$1. The stretch from Jacksonville to Miami is a distance of 377 miles, practically all bad sand, through Mandarin, St. Augustine, Moultrie, Ormonde, Sea Breeze, Daytona, Port Orange, New Smyrna, Titusville, Coco, Rockledge, Eau Gallie, Melbourne, Maco, Sebastian, Quay, Fort Pierce, Palm Beach and Miami. Between Jacksonville and St. Augustine is a good stretch of oyster shell road, and at Ormond is the famous straight-away.

Should you want route books, volumes 3 and 4 of the Automobile Blue Book cover the trip from start to finish, with town-to-town itinerary, mileage, hotel and garage accommodations, etc.—in fact, everything necessary for such a trip. They retail at \$2.50 each.

## ROUGHING IT IN THE WEST

Eldon, Ia.—Editor Motor Age—I recently took a trip from here to Denver and return in my Case 30, a five-passenger car. On starting it was in as good running order as we knew how to put it. The load



VISTA OF ROAD AND MOUNTAIN RANGES AS SEEN FROM LICK OBSERVATORY

consisted of two passengers, kit of tools complete, one emergency casing, four inner tubes, some spring clamps, extra gallon each of gasoline and cylinder oil carried in an extra tool box on the running board, hard oil and transmission grease, spark plugs, baggage and cot. The cot we made ourselves. It folded into a bundle 22 by 8 by 6 inches and was carried strapped to the floor between the seats. In use it rested on the back of the rear seat strapped to goosenecks at one end and supported 4 inches above the back of the front seat at the other end on a pair of legs running from the frame of cot on each side across to the floor of the front seat.

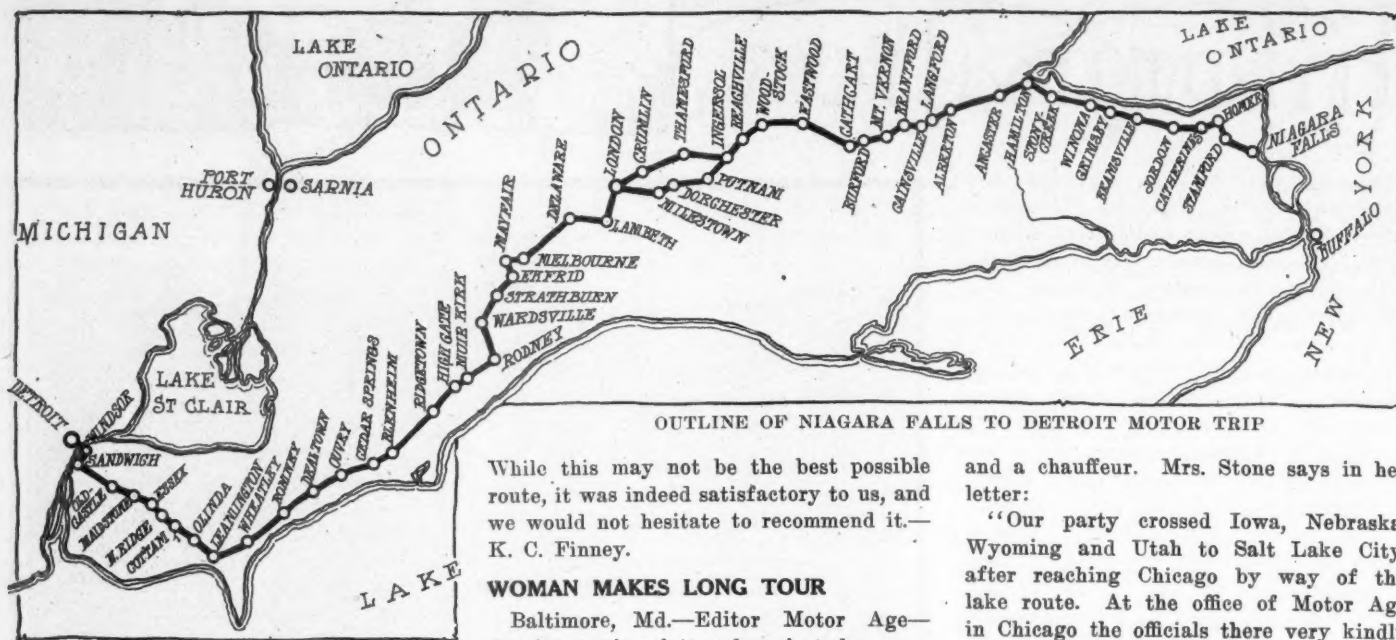
We left Eldon August 6, going to Omaha over the Blue Grass trail. People along this road certainly deserve credit for being in earnest in regard to good roads. Cement culverts, bridges, grading, cuts and fills were the order of the day most of the way. From Omaha we crossed Nebraska over the Platte river route. This trail, barring sand here and there, is good. It is direct but could be better marked. We left this trail at Big Springs and went over the plains northwest to Cheyenne, Wyo. This run was one of the most enjoyable on the trip. The roads were fine, population not crowded and we don't remember having seen a gas engine work better. We made 20 miles per gallon of gasoline here, which we consider good for a car weighing 3,100 pounds.

We went from Cheyenne to Denver via

Fort Collins over another good road. The roads here have enough coarse sand to avoid skidding in mud but not enough to make loose sand on the surface in dry weather. From Denver to Colorado Springs we had our first engine trouble. Going over the divide the engine got so hot that it was almost impossible to keep water in the radiator. One of us made a slight adjustment of the carburetor while the other went over the car hunting for possible loss of power through friction, and the engine worked a great deal better. Each claimed the honor.

After a few days' sightseeing around Colorado Springs and Manitou we hit the trail for home. The first 3 days of the return trip via Pueblo, then east over the new Santa Fe trail, we traveled in the mud. And here we feel like adding a "don't." If you can possibly avoid it, don't, in a long cross-country trip, travel in the mud. It is hard on tires, difficult to keep the machine lubricated, hard on the engine on account of working in low and intermediate so much of the time, to say nothing of the personal discomfort and possible skidding accidents.

The roads through Kansas after we left the irrigation district are ideal for motor-ing. Between Garden City and Dodge City, Kan., was the only time we got stuck on the trip. We undertook to cross an irrigation ditch through about a foot of water with a greasy mud bottom. The front end of the machine went out all right but the rear wheels refused to climb



OUTLINE OF NIAGARA FALLS TO DETROIT MOTOR TRIP

on solid ground. Thinking to back out, we reversed, but when the front wheels dropped into the channels opened by the rear wheels, the lower rim of the flywheel got into water, filling the whole space under the hood with a spray. The gasoline engine objects to a mixture of air and water and it was up to us to hike for help. On our next trip a small block and tackle will be a part of our equipment.

The road from Kansas City to St. Joseph via Leavenworth and Atchison is rocked a large part of the way. At St. Joseph we traveled north over the Ayr line to Mount Ayr, Ia., following the good old painted poles again. This road is smooth but hilly; in fact, we encountered more or less hills the remaining part of the way in. From Mount Ayr we went east over the Waubonsie trail to Centerville, thence north to Albia, and home over the Blue Grass, having covered 2,410 miles.

As we look back over the trip we can think of no one thing that is of more assistance to tourists than the marked pole roads. When sure about directions it is easy to make good time even though the roads are not first class.

We experienced one blowout and two punctures over the entire trip. The total car expense including putting the car in shape after we returned, breakage, tires, gasoline, oil, etc., is \$130.20, itemized as follows:

|   |                 |
|---|-----------------|
| 198 gallons gasoline.....   | \$ 31.10        |
| 24 gallons cylinder oil.....  | 16.60           |
| Transmission grease and hard oil.....   | 1.80            |
| Hard oil cup.....   | .50             |
| Casing.....   | 40.00           |
| Inner tube.....   | 5.50            |
| Two spring leaves broken on trip.....   | 4.25            |
| Prest-O-Lite tank.....  | 3.50            |
| Adjusting carburetor.....   | .25             |
| Belt for fan.....   | .15             |
| Storage at garages.....   | 6.75            |
| Work on car after trip, completely overhauling the engine and cleaning up in general..... | 10.80           |
|   | <b>\$130.20</b> |

The route followed on this trip is the one published in Motor Age in the issue of August 3, the only variation being the Cheyenne trip from Big Springs, Neb.

While this may not be the best possible route, it was indeed satisfactory to us, and we would not hesitate to recommend it.—K. C. Finney.

#### WOMAN MAKES LONG TOUR

Baltimore, Md.—Editor Motor Age—An interesting letter has just been received at the office of the Automobile Club of Maryland from Mrs. Jennie E. Stone, an enthusiastic member of the club, telling of the transcontinental trip she made from Baltimore to Los Angeles, California, in her Packard. The trip was started on May 27 and has just been completed. Mrs. Stone was accompanied by her nephew, Davenport Platt, a maid

and a chauffeur. Mrs. Stone says in her letter:

"Our party crossed Iowa, Nebraska, Wyoming and Utah to Salt Lake City, after reaching Chicago by way of the lake route. At the office of Motor Age in Chicago the officials there very kindly mapped out our route for us as far as they had definite information, but the route, as we knew, is not frequented, and we were advised to inquire as we proceeded.

"Through Iowa there are three good roads. We took the river-to-river and white pole roads—fine, hard, grit highways, well supplied with guiding signs. In fact we had the surest and easiest guiding there than at any other part of our travel except in California. Here the California Automobile Club has an excellent system of indicating whatever trouble there is ahead, like railroads, grades, etc. In Nebraska we seldom had anything but a trail to follow, leading along the railroad track, rarely running more than a mile from it. Except in small, scattered towns of from 100 to 150 inhabitants, we rarely saw man, house or tree. Crossing Wyoming was difficult. The soil has a large mixture of alkali, and alkali mud is dangerous, as the car is apt to sink in it or become stalled until the mud dries. The governor of the state has declared for good roads, and one is started from Rock Spring to Green river, which will likely make a great change for the better throughout the section.

"As far as Ashton, Idaho, within 100 miles of Yellowstone park from Salt Lake City—the latter place having been reached in a day's ride from Evanston, Wyo.—the roads and trails were fair, irrigating ditches frequent, quite passable, though often taking steep dips, but the bottoms are generally gravel and sand. From Ashton we had to feel our way blindly, going through a bit of National park reserve. The high centers through there were quite troublesome because of deep ruts caused by so much freighting.

"The car was driven with two wheels in the center and two on the opposite bank, which was often steep, and, in spite of the steadiest steering the wheels would



#### WICHITA TO FORT WORTH

According to several readers of the touring pages, the heavy black line in the above map represents the best road for motor car travel between Wichita, Kan., and Ft. Worth, Tex., everything considered. This route is said to present the best crossings over the Red river near El Reno. As for the road between Chickasha, Okla., and Ft. Worth, Tex., there is a stretch of sand between Bowie and Decatur, Tex., which a motorist never wishes to tackle the second time.



slip and then woe to the fly wheel. Through this part of the trip we were dependent upon ranches for comforts, the car being left out in the open. About 4 miles from the Harriman ranch, between Yellowstone park station and Ashton, our car became stalled in a mud bottom irrigation ditch. The young ranchman who attends to the Harriman irrigating ditches came to our assistance and, in the course of 3 or 4 hours, succeeded in raising 4 horses and, together with the aid of 6 men, managed to extricate us.

"Gasoline from Wyoming to California is 45 to 60 cents a gallon, adding materially to an expensive trip. For gasoline we were dependent upon the Harriman ranch, which was only an accommodation, and from the depot to the park station. Here we had to leave the car out in the open during the 5 days we visited the park. The hotel furnished us a canvas. I do not see why the park is not open to motor cars.

"For about 300 miles we had no garage. On our way back to Spencer we nearly ran out of gasoline in sage brush full of rattlesnakes. From Portland, Ore., to Los Angeles the mountain passes were narrow, steep and rocky. We dreaded the meeting of other motor cars or teams. Once, in rounding a bend over a precipice, we came face to face within a foot of another motor car in which were four lusty men who gave four lusty shouts. We were in time on two occasions to assist occupants of cars which had gone over the bank—fortunately caught on a tree or a rock and held there while the people were extricated.

"Whether it is safer to cross a desert I do not know. I do not care to try either again until there is a good, broad highway from ocean to ocean. It is an education in the topography of our country, seen as in no other way possible, but open to improvement."—A. Robert French.

#### TOUR THROUGH CANADA

London, Ont.—Editor Motor Age—A route that has become particularly popular this year for motorists living in the vicinity of Lake Erie is that from Niagara Falls to Detroit along the north shore of Lake Erie through the province of Ontario. The arrangements which the Buffalo Automobile Club and other organizations have made to pass their cars into Canada for a certain period of time has done much to popularize this trip. The total distance from Buffalo to London is 152 miles, and from London to Detroit 142, making a total of 292 miles. This makes a pleasant 2-day run with a night stop in this city, which has good hotel accommodation.

From Niagara Falls to Hamilton, a distance of 45 miles, nothing prettier in the touring line could be desired. The roads lead through the famous fruit lands of the Niagara peninsula, which is world-famed for its quality of fruits. This part of the trip skirts the southern shore of Lake Ontario. A noon stop can be made at Hamilton, or

by going 23 miles further a stop can be made at Brantford, a city of 25,000 population. From Hamilton to London by way of Brantford and Woodstock and Ingersoll, the route follows the old Oldduas street road which was made famous in cycling days. From Ingersoll to London an option of two routes is allowed, both of which are equally good.

The second day's run from London to Detroit is not so beautiful after reaching Blenheim, and from Lenton to Sandwich the road passes through the flat lands characteristic of the Lake St. Clair area. In wet weather some difficulty would be experienced in these roads in the flat lands. In the remainder of the route the roads are gravel and can be traversed in wet weather almost as well as in dry.—Canadian.

#### CHISHOLM TRAIL IN OKLAHOMA

Enid, Okla.—Editor Motor Age—In the issue of October 12, on page 27, in routing tourists from Rushville, Ill., to Tulsa, Tex., I notice Motor Age sent them south from

### Touring Club Road Information

RETURNING to Chicago the T. C. A. car covered the short-line route between Denver and Kansas City. This route is the same as the route coming into Bennett. A short distance east of Bennett where the Fort Morgan road turns north the road to Limon swings along the Union Pacific Railroad, keeping due east. Between Bennett and Limon there are at present two very bad dry-creeks to go through; these are each approximately one-tenth of a mile wide and in fact no heavy cars have gone through this, according to reports of the natives, without assistance except the T. C. A. car. The people in Denver are very anxious to promote this route and the citizens of Limon state that before the touring season of 1912 opens concrete will be used here.

From Limon there is an excellent route direct to Colorado Springs if one cares to go that way to Denver when going west. And in the event of this concrete work not being done on these dry-quick fords between Denver and Limon, tourists, going east, should swing south from Denver to Colorado Springs and then to Limon. From Limon east the general impression is that the Union Pacific should be followed, going through Kit Carson, etc. This impression is wrong. The best and smoothest way follows the Rock Island road to Burlington, Goodland and Colby.

At Colby turn south, following a branch of the Union Pacific to Oakley, running east again along the Union Pacific, swinging through Ellis, Russell, Ellsworth, straight into Salina, Junction City, Manhattan, Topeka, Lawrence and Kansas City. The latter part of this route from Salina to Kansas City is eastern Kansas dirt and in very wet weather is very hard going. The tourist should inquire as to the condition of the roads before attempting this on a pleasure trip.

From Kansas City to Atchison the first 18 miles is excellent macadam. The balance of the way into Atchison is dirt road with one or two bad holes in wet weather. Atchison to St. Joe there are two routes: The Ridge road, which the Blue Book published in the 1911 edition is given the preference in extremely wet weather, but the main traveled road under ordinary conditions is what they call the Bottoms road.

St. Joe to Des Moines there are three options all the way. From information gathered from local sources it developed that the Mount Air line was the best. This road goes through Rochester, Gentry, Grant City, with an option between Redding and Mount Air called the White Way, to Dingley, Afton, Macksburg, Winterset and Booneville to Des Moines. This road is exceptionally good with the exception of a few short stretches from Missouri in. Most of this road is dragged and the interest shown along the line in caring for the tourist indicates that this road will be kept up. At Mount Air we cross the Waubonnet trail, at Afton the Blue Grass trail and 8 miles west of Des Moines we run into the river-to-river road between Des Moines and Omaha and also the White Pole line between the same two cities.

Des Moines to Chicago the river-to-river road is the same as published in 1911 without change.

Wichita along the Rock Island main line to Enid, then southeast to Orlando on the Santa Fe and from there south to Oklahoma City, thence west to El Reno, where they strike the Rock Island main line again and go south to Chickasha, etc. In the issue of October 5, on page 19, in routing parties from Milwaukee to Palacios, they were sent from Wichita, Kan., through Winfield, Arkansas City and south along the Santa Fe road to Oklahoma City. From Oklahoma City to Fort Worth, Tex., they were given a choice of two routes, one of which goes west to El Reno and then south through Chickasha, etc.

The Meridian road in Kansas runs south from Wichita to Wellington, and from there to Caldwell, Kan., where it connects with the Chisholm trail, which follows the Rock Island main line through Medford, Pond Creek, Enid, Kingfisher, El Reno, Chickasha, Duncan, Waurika and on south to Fort Worth. This is the best natural road by far in the state of Oklahoma running north and south, and is at present being graded to state and government requirements. Almost everybody going north from Oklahoma City go west to El Reno and then north through Kingfisher, Enid, Medford, Caldwell to Wichita.—W. H. Scarff, Enid Chamber of Commerce.

#### INDIANAPOLIS-ABINGDON ROUTE

Trivoli, Ill.—Editor Motor Age—Through the Routes and Touring Information Department will Motor Age kindly give a route from Indianapolis, Ind., to Abingdon, Ill., as well as the distance and condition of the roads?—G. H. Feigh.

There is a choice of two roads between Indianapolis and Champaign, one a distance of 126.1 miles and the other 137.2 miles. The shortest routing is through Clermont, Brownsburg, Pittsboro, Lizton, Jamestown, New Ross, Whitesville, Crawfordsville, Waynetown, Hillsboro, Veedersburg, Covington, Danville, Catlin, Homer, Urbana and Champaign. You will find this level traveling on good gravel roads. The longer route is graveled to Chrisman, Ill., over fairly rolling country in places and good dirt to Champaign in dry weather. The itinerary is Danville, Winchester, Bainbridge, Hollands, Bellevue, Rockville, Montezuma, Dana, Chrisman, Metcalf, Hume, Newman, Villa Grove and Champaign.

Motoring to Bloomington, Peoria and Abingdon you will pass through Mahomet, Mansfield, Farmer City, LeRoy, Downs, Bloomington, Danvers, Lilly, Mackinaw, Tremont, Groveland, East Peoria, Peoria, Limestone, Hanna, Trivoli, Farmington, Middle Grove, Maquon and Abingdon. Between Champaign and Bloomington there is a natural dirt road with several stretches of gravel; the road to Peoria is good, and to Abingdon a fairly good natural road with a few stretches of gravel or stone.

The Blue Book, volume 4, covers this trip with maps, running directions, mileage from town to town, etc.

## HILL-CLIMBING TEST OF CAR

Reader Discusses Relation of Weight and Power and Suggests New Rating

D U BOIS, Pa.—Editor Motor Age—It has always seemed to me a mistake for a manufacturer to rate his car 40 horsepower, because his engine is rated 40 horsepower.

When we compare the strength of cars, or find their comparative horsepower, we take into consideration the bore and stroke of the engine, but leave out one of the most important parts, that is the car's weight. For instance, we have a 20-horsepower car of 1,600 to 1,800 pounds, and a 40-horsepower car weighing from 4,000 to 4,200 pounds, both in their ability to climb a test hill are exactly equal, yet one is rated 20 horsepower more than the other. This inequality is all due to the difference in weight.

My plan for rating cars would be on the ability of the car to climb a test hill, not upon the ability of its engine. This plan would take into consideration the inequalities of weight, also the different designs of propeller shafts, rear axles and transmissions, in which by friction a great deal of power is lost—in some more than in others. This rating would place cars upon their merits and would give a comparison in which the comparative horsepower of different cars could not be disputed.

Why the makers are so backward in giving the weights of their cars when they give all other specifications is more than I can understand, especially since the weight is almost as important as the bore and stroke of the engine. It invariably happens that when the maker gives the weight, it is around 400 pounds lighter than when in the buyer's hands. It may be that the maker does not wish the buyer to know that he is saving money by placing far too small tires on his car, or else that the car is entirely too heavy for the engine, which, by my way of rating, would be very quickly brought to light.

The S. A. E. formula was a very good one when the square cylinder was in its prime, but since the long-stroke motor has supplanted the square everyone is trying



## The Readers'

**EDITOR'S NOTE**—In this department Motor Age answers free of charge questions regarding motor problems, and invites the discussion of pertinent subjects. Correspondence is solicited from subscribers and others. All communications must be properly signed, and should the writer not wish his name to appear, he may use any nom de plume desired

to change the formula to take in the long stroke. Why not go just a little farther and change it to take in the weight of the car? I should think that with very little trouble a formula could be devised which would take into consideration the different weights. I would be glad to hear from Motor Age and any readers upon this subject.

I have devised a rough formula which would rate the cars on a more equal basis, according to their ability:

$$\text{Horsepower} = \frac{D^2 \times N}{2.5 + \frac{\text{Weight}}{2,000}}$$

For example: A four-cylinder car weighing 4,200 pounds, having a bore of 5 inches, would rate 21.9 horsepower.

$$\text{Horsepower} = \frac{25 \times 4}{2.5 + \frac{4,200}{2,000}} = \frac{100}{4.6} = 21.9$$

horsepower.

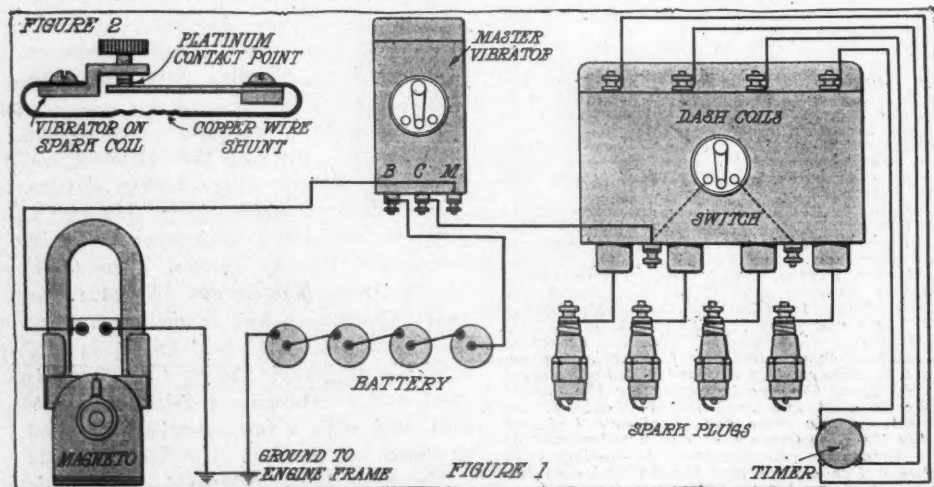
Also a four-cylinder car weighing 1,200 pounds having a bore of 3 3/4 inches would rate almost 18 horsepower.

These horsepowers of course are all based on equal gear ratios, but I am sure the rating will come nearer a car's actual ability than any formula we now have.—W. J. Marlin.

### CONNECTIONS OF SPLITDORF COILS

Roswell, N. M.—Editor Motor Age—Will Motor Age illustrate with a diagram and complete description the wiring and connections of the model D Splitdorf spark coils used on motor cars. The garage men do not understand these coils, and as we are so far from the factory it takes too long to return same for repairs. Such information will help me in locating trouble.—L. F. Woodhead.

The Splitdorf ignition system, showing



FIGS. 1 AND 2—WIRING OF COILS FOR MASTER VIBRATOR

the electrical connections involved and the mechanism used, is given in Fig. 3. The principal feature in which the nonvibrating coil differs from the vibrating type is in the method of interrupting the primary circuit by which the high-tension currents are induced in the secondary winding of the coil. The vibrating type of coil is supplied with an interrupter in which the contact is broken through the attraction of the iron core, which becomes a magnet through the influence of the primary current passing around it. When the primary circuit is opened by this means, a spring causes the vibrator to again close the circuit and the process is repeated indefinitely as long as current is supplied from the battery.

In the nonvibrating coil the interruption of the circuit is accomplished mechanically, usually by means of cam-operated circuit-breaker like that shown in Fig. 3. The coil, having the interrupter separate, is merely a transformer.

The magneto used is that having an armature with but one winding and giving a current of comparatively low tension. The current is discharged through a transformer having a low and high tension winding somewhat similar to a regular spark coil. This steps the current up to a voltage sufficiently high to enable it to jump the necessary gap between the points of a spark plug in the compressed mixture in the cylinder of the motor. The plain H or shuttle armature of the magneto is mounted between two annular ball bearings. One end of the shaft is the driving end and the other is equipped with the breaker cam and the insulating plug which delivers the current generated in the armature to the collector brushes from which it goes to the transformer connection.

From A the armature current goes through the switch and the primary of the transformer, and the circuit being broken at the proper moment a very high voltage current is induced in the secondary winding of the transformer, and being delivered to the heavily insulated cable is conducted to the central brush of the distributor, whence it is delivered to the spark plugs in the different cylinders in sequence.

In addition to using the current from the magneto the transformer is used as a



# Clearing House

**EDITOR'S NOTE**—To the Readers of the Clearing House columns: Motor Age insists on having bona fide signatures to all communications published in this department. It has been discovered that the proper signature has not been given on many communications, and Motor Age will not publish such communications, and will take steps to hunt down the offenders of this rule if it is violated.

spark coil by using the breaker mechanism of the magneto as a circuit-breaker to interrupt a current from the battery, which can be switched in for starting purposes or for an emergency. The distributor is used to deliver the current thus generated to the spark plugs. This gives a dual system with one set of spark plugs.

## ASKS ABOUT DOUBLE-SPARK IGNITION

Pittsburgh, Pa.—Editor Motor Age—Through the columns of the Readers' Clearing House will Motor Age answer the following questions:

1—Is the two-point double-distributor magneto ignition system suitable for heavy touring motors as well as for racing?

2—Will the motor stand up under the additional horsepower claimed to be produced in a T-head motor by the two simultaneous sparks?

3—Does this system result in a perceptibly greater fuel efficiency?

4—What, if any, are its effects?

5—Cannot some of the readers of Motor Age throw light on the subject from actual experience?—Jeb.

1—Yes.

2—Yes; the additional pressure occasioned by the rapid combustion of the mixture is not sufficient to cause an appreciable extra strain on the motor.

3—The gain in efficiency depends upon the motor, but is usually very noticeable.

4—The time necessary for complete combustion of the mixture is practically halved. The greatest pressure is reached immediately after spark takes place, permitting the use of less spark advance.

5—Motor Age would be glad to hear from any of its readers who have had experience with this system.

## KNIGHT MOTOR ROYALTIES

Monon, Ind.—Editor Motor Age—Through the Readers' Clearing House will Motor Age answer the following questions:

1—Is there any limit in the price of motor cars manufactured that may use the Silent-Knight valveless motor?

2—Are there any cars besides the Stearns, Stoddard-Dayton and Columbia using this motor for 1912 models?

3—How much royalty is paid the inventor for the right to manufacture these motors?—H. B. Tull.

1—Motor Age understands that the cars

using this motor for the 1912 season will not be manufactured in America listed to sell under \$3,500.

2—It is expected that other cars may use some of these motors during the 1912 season, but they have not been able to announce it as yet.

3—You will have to communicate with Knight & Kilbourne, 67 West Water street, Chicago, Ill.

## MASTER VIBRATOR ON FORD

Madison, Ga.—Editor Motor Age—Through the Readers' Clearing House will Motor Age tell me if a K-W master vibrator would add anything to the efficiency of my model T Ford. The dash coil box is a Kingston and is beginning to fail. If so, I would like to have you publish a wiring diagram, and would I continue to use the Kingston coil?—A. K. B.

It is possible that the addition of a master vibrator coil will increase the efficiency of your coils enough to remedy the trouble. You will at least have uniform action in all coils, which is the chief advantage of the master vibrator.

In Fig. 1 is shown the method of wiring a four-cylinder car with magneto and dry cells or storage battery. Where the battery is not used, as in the Ford cars, the terminal B on the master vibrator is not used. The vibrators on the dash coils must be short-circuited, as shown in Fig. 2.

## AGE LIMIT IN ILLINOIS

Downers Grove, Ill.—Editor Motor Age—Through the Readers' Clearing House will Motor Age inform me what the Illinois law is relative to the age proposition in regard to driving one's own private car?—Thomas A. Kidwell.

The Illinois state law permits no one under 18 years of age to drive a motor car.

## VIBRATORS CAUSE OF MISS

Carpenter Outlines His Experience With Poorly Adjusted Tremblers

Sauk Centre, Minn.—Editor Motor Age—Some time ago I was bothered with a missing cylinder in my roadster, and try as best I could for nearly 2 hours I failed to find the real cause of the missing. I tried every practical method in use to locate this difficulty, but locate it I could not. It is a fact with me that I will not run a car one rod, if a four-cylinder motor, after I learn that it is missing, as it tends to destroy the bevel gearing, gearset, clutch and, in fact, the whole car, as it were, from the excessive vibration set up by the miss.

I took out each spark plug, all of which were right, tested them by placing on the cylinder head and turning on the current. Then I followed the wiring system inch by inch, and this was in perfect order. Then it was the timer that next had attention, and everything here was in working order. I then went all over the terminals, primary and secondary, ground wire, and still no results. I would each time try the motor, which would promptly respond to the crank and run quite well if you did not put your fingers on the vibrator springs to detect the missing cylinder, which I found was No. 1. When I would put two fingers each on No. 2 and No. 3 the motor would vibrate, slow down and almost stop as one cylinder only was firing, but as soon as these two vibrators were released the motor would speed up with still the miss. When I would put my fingers on No. 1 and No. 4 the two inside cylinders, being perfectly balanced, would run very nicely, but as soon as Nos. 2, 3 and 4 were pressed upon the motor would promptly stop. What perplexed me most was the hum of each vibrator when contact was made, and this fact is understood that the motor will fire perfectly, either No. 2 cylinder or No. 4 cylinder.

I now came to the conclusion that the fault was in the adjustment of the coil

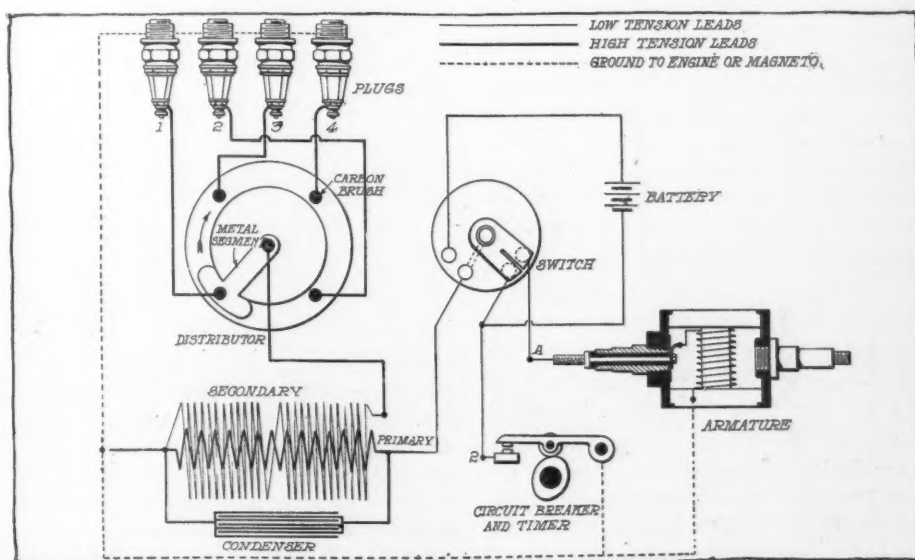


FIG. 3—SPLITDORF IGNITION CIRCUIT TO SHOW COIL CONNECTIONS

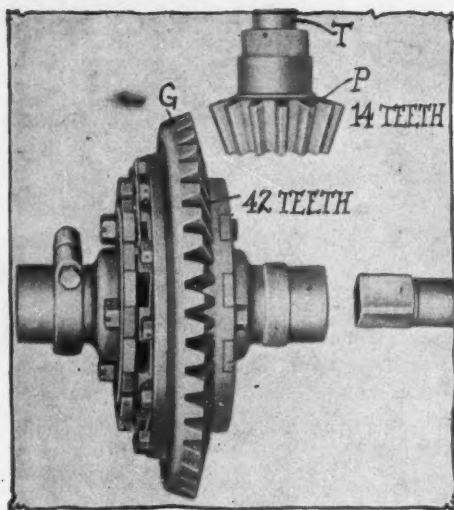


FIG. 4—DRIVING GEAR RATIO

vibrators down fine, so I took off No. 1 and found it, to all appearances, all right; so to make proof I substituted No. 1 for No. 2 and found the miss was transferred from No. 1 to No. 2. I was right in my belief that the vibrators were in fault, so I took one of the vibrators that fired its cylinder perfectly and placed it side by side with the one in fault, and right here it was easily seen where the real trouble was located. By some unknown cause the platinum end of the vibrator spring had become bent slightly upwards so as to press too tightly against the contact point above, thereby preventing proper vibration of the vibrator spring, but still enough life left in it to carry the spark to the plug and to hum when in contact, thereby mystifying one as to the real cause of the trouble. I properly adjusted the tension of the spring and placing it back home, cranked my motor and the result was most pleasing indeed, it responding quickly, and as I adjusted the adjusting screw until no miss was to be heard and the vibration was gone. I think one should attend to this matter immediately, that the serious consequences by neglect should be avoided. A friend of mine broke his crankshaft by neglecting this very important adjustment when it should have been made at once, and he would have saved \$20 for the shaft and \$10 for putting it in. It is bad enough to use the motor in testing when it is independent, but when it is carrying a load it will soon destroy the vital parts of the mechanism of the car, with a large repair bill clearly in sight.—A. D. Carpenter.

#### ANTI-FREEZING MIXTURE

Danville, Ill. — Editor Motor Age — Through the Readers' Clearing House will Motor Age answer the following questions:

1—Give a solution for keeping the water in a radiator from freezing as low as 10 degrees below zero.

2—Would such a solution heat an engine too much if the temperature should become 35 or 40 degrees above zero?

3—After the water has been let out of a radiator on a cold night, should the en-

gine be run for a time, and if so, how long?—Ralph W. Jones.

1—For temperatures not lower than 15 degrees below zero the following solution is recommended:

|                 |             |
|-----------------|-------------|
| Alcohol .....   | 17 per cent |
| Glycerine ..... | 17 per cent |
| Water .....     | 66 per cent |

2—No; it would have no heating effect.

3—Run the motor for 2 minutes with the drip cock at the bottom of the radiator open. You are referred to a special article entitled "Equipping a Car for the Winter," in Motor Age, October 26.

#### MORE DETAILS NEEDED

Little Rock, Ark.—Editor Motor Age—Through the Readers' Clearing House will Motor Age give me some advice relative to the trouble I am having with my 1910 Great Western car. I have had no trouble with my car until a few days ago a miss occurred in the ignition. I had the valve ground, the carbureter cleaned, and the Splitdorf magneto taken down and thoroughly examined. There seems to be nothing the matter with it. The only thing left to examine that I know of is the coil and from the outside it looks all right; however, it hangs over the flywheel and I thought possibly it might have become oil soaked.—J. G. Burlingame.

You do not state whether the motor misses in all cylinders or in only one or whether the miss is constant or intermittent. If you will tell just how and when the miss occurs, Motor Age may be able to help you. It is possible that the coil has become oil-soaked. If water has access to the coil this is more liable to cause damage.

#### MAGNETO MOUNTING CORRECT

Harvey, Ill.—Editor Motor Age—Would Motor Age, through the Readers' Clearing House, answer the following: When the magneto is resting on a cast iron crankcase bracket is it detrimental to the magneto? Should there be some shimming between and how much?—F. A.

No. The only shimming necessary is that required for lining up the shaft.

#### START MOTOR WITH ETHER

Woodward, Ia. — Editor Motor Age — Through the Readers' Clearing House will Motor Age state whether or not it is injurious to the motor of my car to start it in cold weather by putting a drop or two of ether on a sponge and putting it into the air supply tube of the carbureter. I find my engine will start on the coldest day with one crank when doing this.—Claude E. Nichols.

There is no apparent reason for believing this method of starting to be injurious to the motor.

#### TO FIND THE GEAR RATIO

Parsons, Kan. — Editor Motor Age — Through the Readers' Clearing House will Motor Age answer the following questions:

1—Explain the meaning of gear ratio of a motor car.

2—What is the formula for finding the cubic inches of piston displacement and

what is meant by the term, piston displacement?

3—Would it affect the power and speed of a motor to put a petcock in the intake manifold? Would it increase the speed?

4—Is the 1912 Chalmers equipped with a Bosch magneto?

5—Explain how to adjust a Rayfield carbureter.—L. M. Robinson.

1—The gear ratio of a car is the ratio between the number of revolutions of the driving wheels and the crankshaft of the motor. If the driving wheels of a car make one revolution to three revolutions of the crankshaft of the motor, the gear ratio of that car is 3 to 1. When the gear ratio of a shaft-driven car is spoken of, the ratio between the number of teeth on the driving pinion and the number of teeth on the larger driven pinion are meant, and on a chain-driven car the ratio between the number of teeth on the driving sprockets on the jackshaft and those of the wheel's sprockets generally are the determining factors.

On direct drive, the crankshaft of the motor of a car with a 3 to 1 gear ratio would make three revolutions for every revolution of the driving wheels; but this does not necessarily mean that the same always is true when driving on the high gear, for in many four-speed gearsets the fourth speed is not direct but geared a little higher than direct, so that the drive or propeller shaft turns a little faster than the crankshaft of the motor.

In Fig. 4, the driving pinion and gear of a shaft-driven car having a 3 to 1 gear ratio is illustrated. The pinion P, which is keyed to the propeller shaft T, has fourteen teeth, and the gear G, which is indirectly connected to the driving road wheels through the differential mechanism and the transverse drive shafts, has forty-two teeth; therefore, the pinion P must make three revolutions to make one revolution of the gear G.

2—By the term piston displacement is meant the volume of gas in the cylinder displaced by the piston in its movement from the upper to the lower point of its stroke. The piston displacement in cubic inches of a motor is found by multiplying the square of the cylinder bore in inches

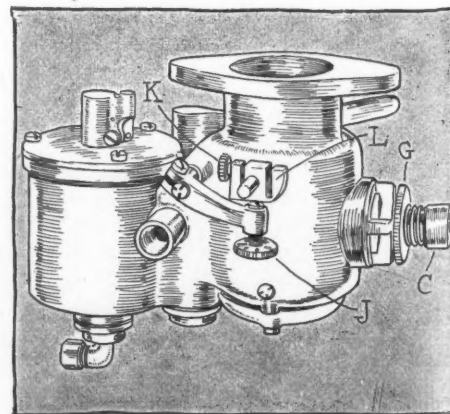


FIG. 5—ADJUSTMENT OF RAYFIELD CARBURETER



by .7854 and then by the stroke in inches. This gives the piston displacement of each cylinder. If the product thus found be multiplied by the number of cylinders, we will have the piston displacement of the motor. This is equal to the volume of the cylinders less the compression space.

3—Some motors are benefited both as to power and speed by admitting extra air to the intake manifold, especially at high speed. Your arrangement would be improved by having it operative from the dash.

4—The 1912 Chalmers cars are equipped with the Bosch dual magneto.

5—To adjust a Rayfield carburetor, first, close the needle valve. This is done by turning the knurled screw J, Fig. 5, to left until screw leaves contact with the cam L, which indicates that the needle valve is seated. Then turn screw J to right about one and a quarter turns, then start motor.

For more fuel, turn knurled screw J to right to increase supply, and to left to decrease it. This adjustment should only be made at retard or low throttle. Having found your right fuel supply at retard, then open throttle. If back-firing occurs, turn high speed adjusting screw K to right, which increases the fuel supply at open throttle, and to the left to decrease. For adjusting the throttle opening, use screw driver to turn screw in stop arm.

Having found your right fuel supply for both low and high speed, then open throttle slowly. If back-firing should occur between low and high speed, turn adjusting disk G to left; this increases the tension on springs which control the automatic air valve. This disc is usually set so that large spring on the automatic valve has about  $\frac{1}{16}$  inch play between adjusting disk and cap.

After all adjustments are made, in order to prove that you have proper fuel supply, press with finger on cap C, giving surplus air. If motor speeds up, this indicates a mixture too rich. Disk G should then be turned to right until motor begins to reduce speed, or back-fires, then turn disk G to left, until motor runs smoothly. This should be done with the throttle about one-eighth open.

## A QUESTION OF BEARINGS

Mazon, Ill.—Editor Motor Age—Through the Readers' Clearing House will Motor Age answer the following questions:

1—What are the best kind of bearings for a motorcycle, bronze or roller?

2—Which will wear longer?

3—Give points in favor of and against each.—A Subscriber.

1—Roller bearings are generally considered the better, but this depends to some extent on the location.

2—There is less friction in roller bearings and if the correct bearing surface is used they should last longer than plain bearings.

3—Roller bearings generally are given credit for absorbing less power in friction and for having longer life. Plain bearings

are cheaper and give just as good service under some conditions.

## DIRT TRACK RECORDS

Spokane, Wash.—Editor Motor Age—Through the Readers' Clearing House will Motor Age state the present records made on a ½-mile flat dirt track for stock cars of from 3¾- to 5-inch cylinder bore, for 1, 5 and 10 mile distances.—J. F. S.

The American Automobile Association, the governing body, does not tabulate records made on 1/2-mile tracks, consequently there is nothing official as to times made on such ovals.

## SUGGESTS CAUSE OF MISSING

Collinwood, O.—Editor Motor Age—In answer to W. E. H., of Carrington, N. D., asking why his Hupmobile misses fire, I am sending the accompanying explanation and illustrations, Fig. 6, which may be of some help to him.

by dressing down center of brush with a round file. If, on the other hand, the motor missed only on one cylinder, would suggest looking at the valve stems. The valve springs on this motor are held on the valve stems by a wide washer 8, as shown at D, which is in turn held on the stem by pin 9. If the valve is set right, there should be a space just sufficient to pass a postcard through at 7. I have found cases where washer 8 was drilled for the pin out of the center, measuring up and down.

While this would be all right in D, if the washer would accidentally be reversed in replacing, as at E, it would raise the valve more or less according to the amount the washer was out of center. This, if only slight, would only cause missing on low speeds; if greater, would cause the cylinder to stop firing altogether.

These are cases not frequently found.

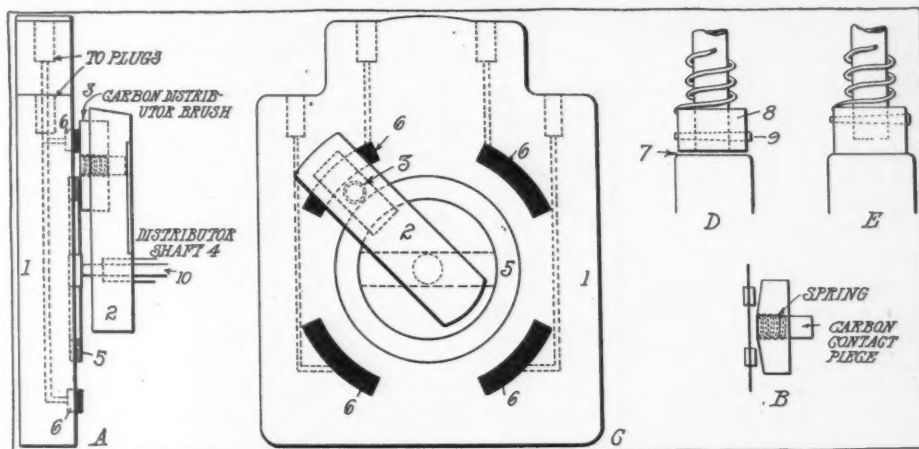


FIG. 6—ILLUSTRATING SEYMOUR'S ANALYSIS OF HUPMOBILE MISS

As he does not say in what way it misses fire, whether all cylinders at times or only one cylinder, it is hard to tell just what is the trouble. If the former, I would suggest that he look at the magneto distributor brush. I have found this same trouble on three Hupmobile motors and in all cases it was at this point. The magnetos on which I found the trouble, and I suppose the W. E. H.'s machine is equipped the same, is a Bosch model D4 arc-light magneto used for both starting and running. In this magneto the high-tension current is carried from the armature ring at the back of the magneto through an insulated rod 10, which passes through the hollow distributor brush holder shaft 4, in A, making contact with a spring attached to the ring 5, in C. From this ring 5 the current is carried to the distributing segments connected to the spark plugs by the carbon brush 3, in A. This brush as a rule will run many thousand miles without giving any trouble, but I have found several cases where they were worn off as in the exaggerated drawing B, caused by rubbing contact with segments 6, 6, 6, 6, or 5. While the brush may not look high in the center, as in B, it may be enough to cause poor contact.

This can be remedied, if not too bad.

but I have taken it for granted that W. E. H. has looked for such causes as: Water in gasoline, loose connection of ground wire, circuit breaker poorly adjusted, broken or sooty plugs, leaky intake gaskets or sand hole in the intake pipe, loss of compression, etc.

If this should not prove of assistance, I would be glad to have W. E. H. write, describing just how his motor acts.—Thomas A. Seymour.

## CORRESPONDENCE SCHOOL DEGREES

Wichita, Kans.—Editor Motor Age—Through the Readers' Clearing House columns will Motor Age give me the address of a good correspondence school which can confer the title of M. E. legally upon graduates so it will hold honor anywhere? I wish to take a correspondence course, and want it from a good reliable school only.—Val R. Cole.

The National Correspondence Institute, Washington, D. C., is authorized by act of congress to confer the titles of C. E., E. E. and M. E. upon graduates of certain courses in civil engineering, electrical engineering and mechanical engineering respectively. Motor Age knows of no other correspondence institution so authorized.

# Three Everitt Models Now Being Built

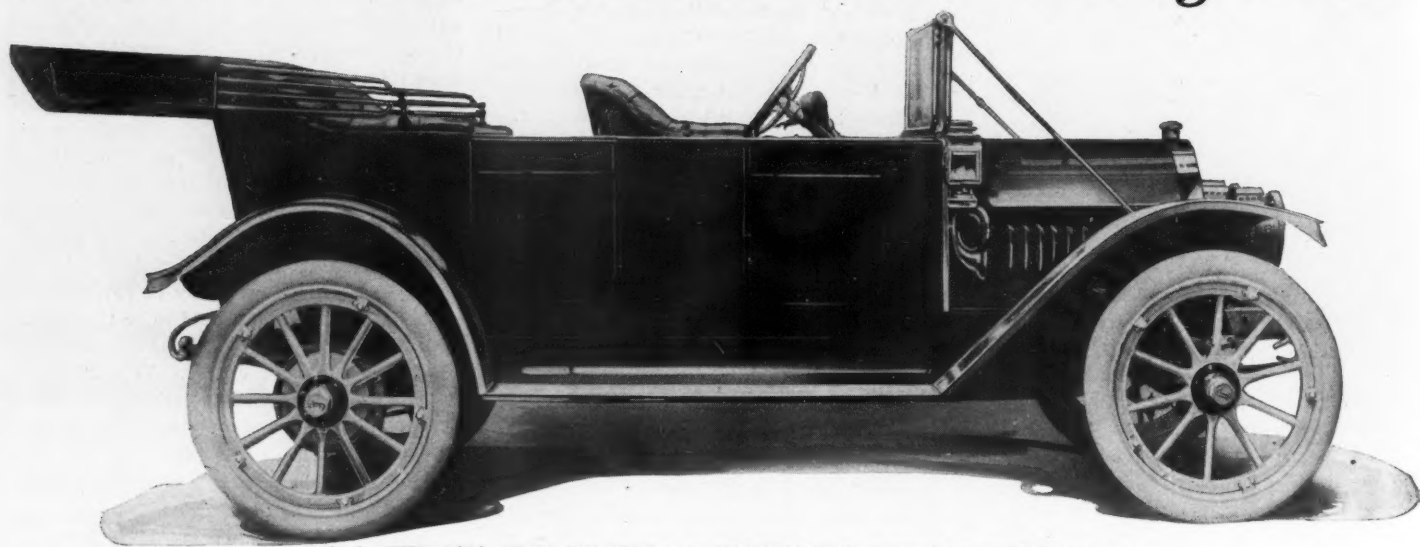


FIG. 1—THE 1912 FOUR-CYLINDER 36-HORSEPOWER EVERITT TOURING CAR

ON inspection of the 1912 Everitt cars, which are made by the Metzger Motor Car Co., Detroit, Mich., impresses one with the idea that, in the design and construction, the company had idealized the real, and then realized the ideal.

Two new models, equipped with compressed air motor starting devices, have been added to the line, so that it now comprises two chassis with four-cylinder motors, one rated at 30 horsepower and the other at 36 horsepower; and one chassis having a six-cylinder motor rated at 48 horse power. On these are mounted most modern fore-door bodies.

## All Have Same Characteristics

The same general characteristics exist in all chassis models. The motors have cylinders of L design, all cast in one piece and integral with the upper half of the crankcase. A leather-faced cone clutch is contained in the motor flywheel. From the clutch the power is transmitted through a long propeller shaft with a

## Two New Models, a Four and a Six, Added To Everitt Line for 1912—Both Are Equipped With Self-Starting Mechanism

single universal joint at its forward end. The propeller shaft is inclosed in a torsion tube which is yoked at its front end to a heavy cross-member of the main frame; and the torsion tube, selective sliding-gearset and semi-floating type of rear axle are all rigidly bolted together to form the transmission unit. The frame is a double drop design, and is supported by semi-elliptic front and scroll elliptic rear springs. The general dimensions of the different models are as follows:

| Chassis Models.      | Four-30 | Four-36  | Six-48   |
|----------------------|---------|----------|----------|
| No. of cylinders.... | 4       | 4        | 6        |
| Bore .....           | 4       | 4        | 4        |
| Stroke .....         | 4¾      | 4¾       | 4¾       |
| Wheelbase .....      | 112     | 115      | 126½     |
| Tires .....          | 34x3½   | 34x4     | 36x4     |
| Tread .....          | 56      | 56 or 60 | 56 or 60 |

A list of the many refinements and improvements to be found in the new 1912 models will serve to show the thorough attention that has been given to the details of their construction. Beginning with the motor, the valves are inclosed in a dustproof case with an aluminum cover held in place with two small hand wheels; these give the motor a neat appearance on the valve side and reduce wear and noise of the valve-operating mechanisms to a minimum. Pushrods and guides are of larger diameter and longer, which increases the bearing surface.

## Details Carefully Worked Out

The motor crankshaft is larger and stronger throughout. Connecting rods are longer, decreasing the angle of pressure; and the babbit is cast into the big ends of the rods instead of die cast and fitted into them. Pistons are ¾ of an inch longer, which adds to their bearing surface and tends to avoid piston slaps. In the oiling system, the reservoir is removed from the side of the cylinder casting and placed on the left side of the lower crankcase. The oil reservoir is provided with an indicator showing the oil level at all times. There is a cored passage extending from the valve side to the opposite side of the motor between the center cylinders, and the inlet pipe of the carburetor is secured or flanged to this passage in a neat fashion. There are two combined breathers and fillers, one on the engine gearcase cover and one on the right-hand side at the rear of the crankcase. The top casting of the cylinder is enlarged and of semicircular section. Water inlets and outlets are 1 inch in diameter, giving a very free passage of water. And a large flywheel is fitted to insure a steadier running motor.

Bodies are of the straightline, fore-door type, with larger and roomier tonneaux. Door handles are placed inside to give the body a cleaner appearance. Front floor

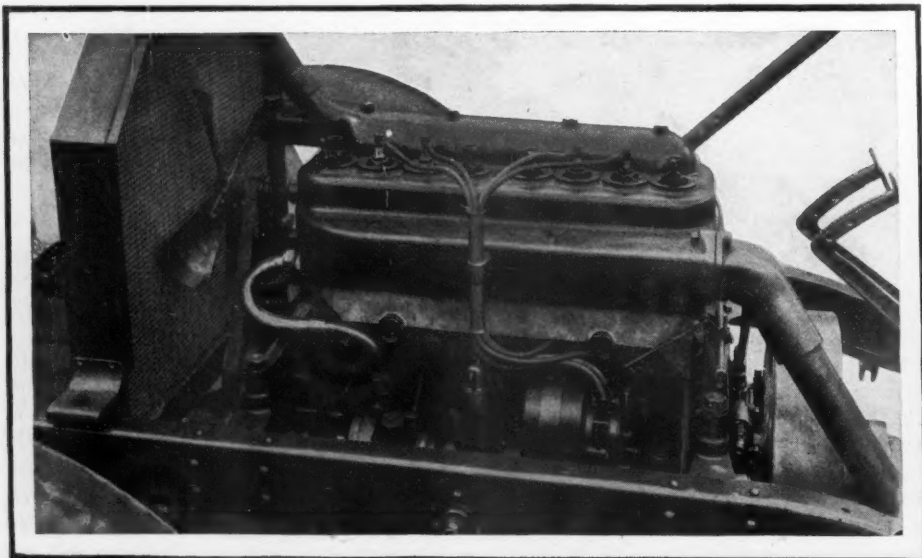


FIG. 2—SHOWING LEFT SIDE OF EVERITT FOUR-36 MOTOR



boards are covered with linoleum and brass bound. There is a small removable section in the floor board, giving access to the grease cups on the torque tube yoke. This yoke is pivoted on hardened and ground pins and provided with bronze bushings.

A ball and cup universal type of clutch control is employed; and the bearing surfaces are of hardened steel on bronze. The operation of the universal joint is improved by the addition of two spring steel washers under the joint blocks to hold them outward and eliminate noise. The propeller shaft is longer and larger in diameter. Axle shafts also have been increased to  $1\frac{3}{8}$  inch in diameter; and one hardened key is used on the differential gear end, which has a larger taper hole.

The gasoline tank has been rendered removable, and is provided with a three-way valve, providing a reserve supply of gasoline, which may be used by turning the valve lever to the proper place indicated on a dial plate marked: Line, Reserve, and Off. This plate is placed on the right side of the frame, and is easily reached underneath the running board. The fitting also is provided with a sediment drain; and a  $\frac{3}{8}$ -inch gasoline line is used, giving a more free passage of fuel.

The self-starting device on the 1912 Everitt six and four-cylinder models is of the compressed air type. The compressed air is obtained from one of the cylinders on the explosion stroke and stored in a large pressure tank, Fig. 4. There is a needle valve N on the dash, which is controlled by a push button B; when this is opened, the air pressure from the tank passes on through a distributor on the rear end of the motor camshaft, which leads it into a tube communicating with the cylinder whose piston is on its firing stroke. The pressure in the cylinder forces the piston down, and as soon as it has passed the bottom center, the air pressure is automatically switched into another tube, through which it is conducted to the next cylinder, whose

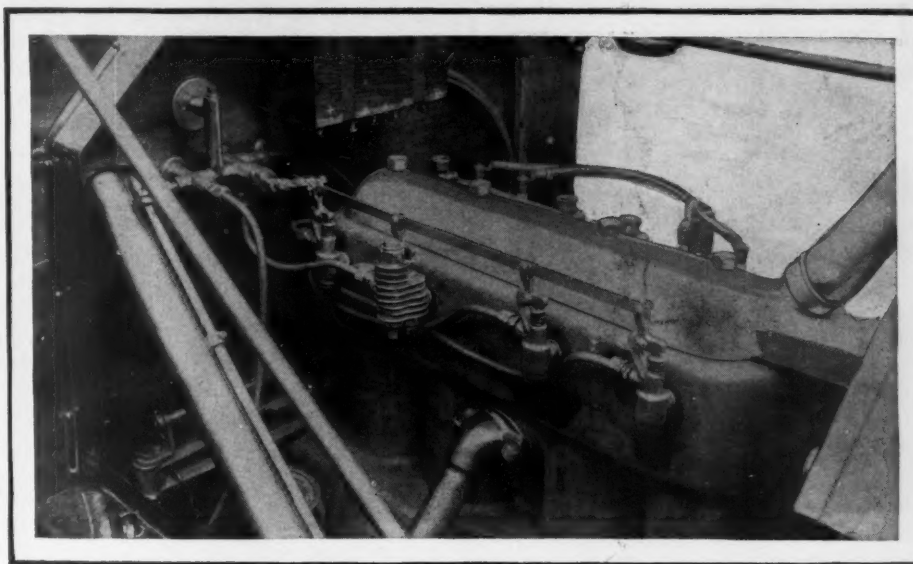


FIG. 3—EVERITT MOTOR SHOWING SELF-STARTER PIPING AND PUMP

piston is beginning its firing stroke. The tank is claimed to hold sufficient air to turn the motor crankshaft over a hundred times at a high rate of speed. Dash fittings are provided with a pressure gauge G and the tire hose may be connected there to for inflating the tires.

#### Many Details Improved

Running boards are longer and wider and are covered with linoleum and brass bound. The lines of the fenders are greatly improved, giving the car a more massive appearance. Wheels are larger, have larger spokes, and are equipped with Detroit demountable rims. Brakes are of a new design, and both the internal and external ones are covered with Raybestos and inclosed in a steel housing. The frame is longer and of heavier material. The steering wheel is larger, being 18 inches in diameter, and the steering column tube is enlarged to  $1\frac{1}{4}$  inches and is carried down to the bottom of the shaft, giving it a neater appearance. Chrome nickel steel, it is claimed, is used throughout the car in all parts requiring great strength and durability.

Inasmuch as the Everitt cars are practically identical in construction, a description of one of the models with the illustrations shown herewith, should serve to give one a fair idea of their design. The motor is suspended by two drop-forged steel cross members of I-beam section, which rest on brackets riveted direct to the side members of the chassis. By casting the cylinders, the upper half of the crankcase and the inlet and exhaust manifolds in one piece, permanent rigidity, alignment and unusual simplicity is obtained. The return manifold, which also is of cast iron, is of such proportions that it forms a detachable head for the water jackets as well; this permits of a convenient inspection or cleaning of the water jackets, if necessary. The lower half of the motor crankcase is of aluminum and removable for the adjustment or inspection of the connecting rod or crankshaft bearings. This portion of the case contains the oil reservoir and forms the splash chambers of the simple vacuum-feed oiling system employed. The engine bearings all are contained in the

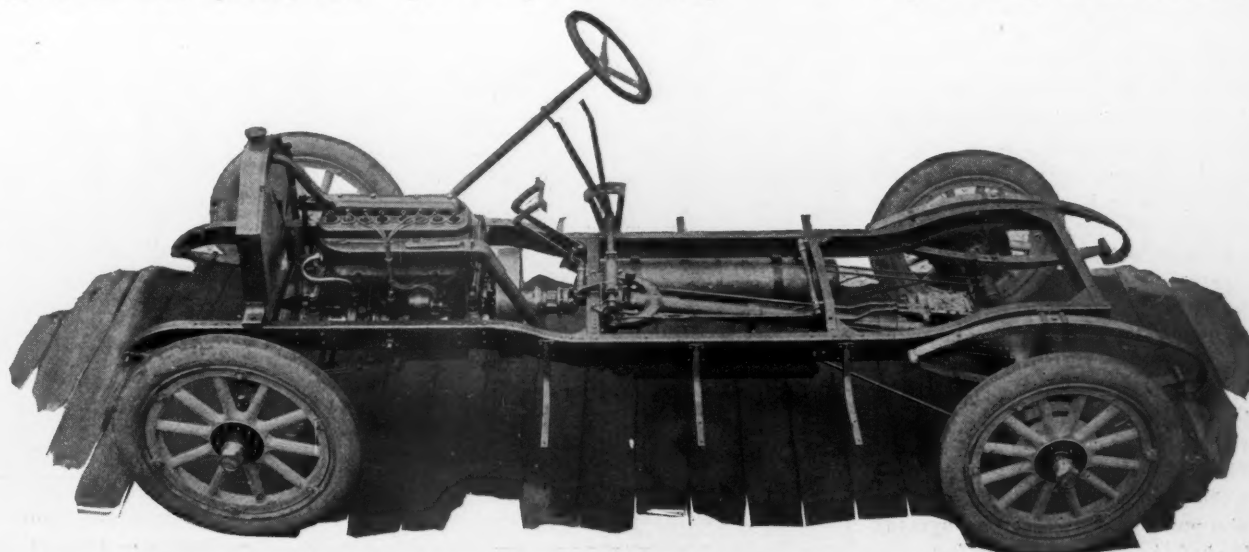


FIG. 4—THE 1912 EVERITT CHASSIS WITH FOUR-CYLINDER MOTOR, AIR TANK OF SELF-STARTER ON RIGHT UNDER FRAME

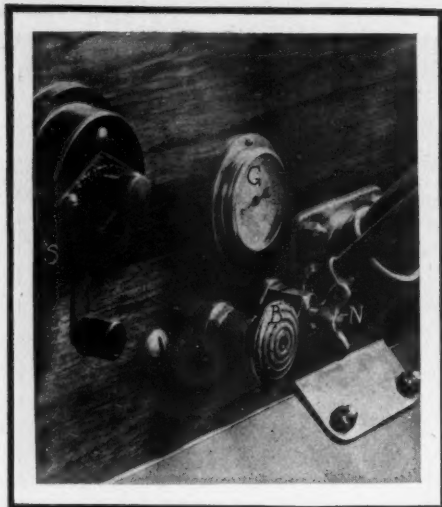


FIG. 5—EVERITT DASH MECHANISM

upper portion of the crankcase, and the removal of the lower portion does not in any way disturb them.

Pistons are of cast iron, and have three eccentric compression rings above the piston pin. The piston pins are anchored in the pistons, and cast iron bushings are used in the upper ends of the connecting rods. The rods are steel drop forgings of I-beam section, and the lower ends are lined with Babbitt metal, which is cast into place. Two bolts hold the caps of the lower ends.

The crankshaft is a drop forging; and the crankshafts of both the four- and six-cylinder motors are mounted in three Babbitt bearings, the upper halves of which are die cast and the lower halves cast into the caps. Camshafts also are drop forgings, with the cams forged integral. The bearing surfaces of both the crankshaft and camshaft and the faces of the cams, all are ground to size and contour.

#### Cylinders of L-Type Design

Being an L-type motor, all of the valves are on one side, and operated by a single camshaft. The valves are of the bevel-seated poppet design, and the lifters are of the mushroom type and provided with adjustments to regulate the space between their upper ends and the ends of the valve stems. This adjustment and the system of enclosing the valve operating mechanisms should prolong the life and promote smooth and silent operation.

Cooling is effected by means of a vertical tube radiator having the neat appearance of a cellular design. A centrifugal pump with a 1-inch outlet stimulates the water circulation; and an adjustable belt-driven fan augments the air draft through the radiator. The simplicity of the short and direct water connections is a feature of the cooling system. The pump is conveniently located on the left side of the motor and supported by a bracket cast integral with the upper section of the crankcase. The shaft which drives the pump also drives the magneto; and this shaft is driven by gear from the spiral engine gears enclosed in an integral

housing at the forward end of the crankcase. Spiral engine gears are employed because of their noiseless operation. The crankshaft and pumpshaft gears are made from drop-forged steel, and the camshaft gear is of cast iron. All are lubricated by splash from the crankchamber.

Lubrication of the motor is so simple that little need be said of it. A certain quantity of oil is kept in the splash compartments of the crankcase, the required level being maintained by a vacuum feed from the reservoir, as in the E.-M.-F. or Flanders cars. The oil that is splashed around by the spinning crankshaft and rods creates a constant spray in the interior of the motor that lubricates all internal mechanisms.

Ignition is by means of a Splitdorf dual system, in which a low-tension magneto mounted on an iron cradle generates and distributes current, which is stepped up or strengthened by an induction coil mounted on the front of the dash under the hood over the engine. Dry cells are employed to facilitate starting; and the wiring is neatly arranged and thoroughly protected from the heated portions or moving mechanisms of the motor.

#### The Transmission of Power

Transmission of power from the motor is by means of a leather-faced cone clutch, with springs under the leather to promote smooth engagement. There is a double universal joint between the clutch and the propeller shaft; and the front end of the torsion tube, which encloses the propeller shaft, rests in a heavy yoke hinged to a stout channel steel cross member of the frame.

The gearset is contained in a housing which is bolted to the rear-axle housing; and both shafts of the gearset are in the same horizontal plane. The transmission gears slide on the main shaft of the gearset, which is mounted on a Timken roller bearing at the rear and a phosphor bronze bearing in front. Die-cast babbitt bearings support the countershaft.

In the rear axle, which is a non-floating

design, phosphor bronze bearings are employed at the inner ends of the shafts, and the outer ends run in Hyatt roller bearings. The front axle is an I-beam drop forging, equipped with adjustable ball bearings. Malleable cast iron housings inclose the change speed gearset and rear-axle mechanisms, and the rear-axle tubes are pressed and riveted into the bevel gear housing. Diagonal truss rods extend from lugs on the torque tube to the rear-axle brake housings; and the gear-shifting rod runs parallel with the torque tube.

Control of the car is conventional, the spark and throttle levers are on a quadrant secured to the steering column under the steering wheel; there are pedals for operating the clutch and service brakes; a foot accelerator is provided; and the gear-shifting and emergency brake levers are to the right and in front of the driver's seat and on the inside of the body.

#### MOTOR CAR LITERATURE

The Mea magneto is described in the latest catalog of the Marburg Brothers, Inc., New York. The principles of the magneto are thoroughly discussed, and complete instructions given. A list of the parts with illustrations of each is a feature of the catalog.

The Mora Power Wagon Co., Cleveland, O., in a conventional catalog illustrates and describes its line of commercial vehicles suitable for light trucking and package delivery.

The Hupp-Yeats electrics are attractively featured in the latest catalog which the Hupp corporation has recently published. The usual catalog specifications are included.

In a conventional catalog the line of Corbin cars for the 1912 season are described and illustrated.

"Power Chains and Sprockets" is a treatise by Lucius M. Wainwright, which the Diamond Chain and Mfg. Co. has published in the interest of its chains. The book is profusely illustrated.

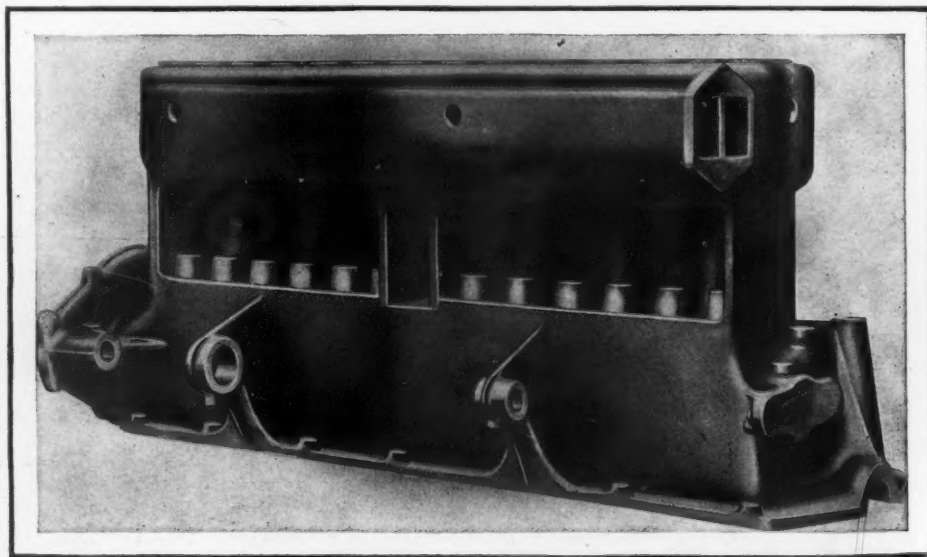


FIG. 6—EN BLOC CASTING OF EVERITT SIX-CYLINDER MOTOR





# The Motor Car Repair Shop

IN Fig. 1 is shown an excellent example of what may be accomplished by way of a simple and systematic tool room or stock room for the average motor car agency. This photograph was taken from the entrance to the tool and stock room of the Packard agency, Chicago. In taking this photograph the photographer stood just outside the swinging door, which has a shelf upon it. On the left in the photograph is shown two small racks with drills upon them and a light arranged just above the racks, so that the boy in charge of this section of the department may readily find the drill called for by the workman. Immediately below the top rack there is a board with little spindles upon it, and brass checks bearing the number of the workmen are hung upon this board whenever a drill is taken from the tool room. The larger tools also have individual spindles opposite their places upon which these brass checks must hang whenever a tool is absent. All tools are neatly arranged and accessibly, and in plain sight, so that the tool room keeper can at a glance learn just what tools are missing and what workman is responsible for them. At the left, just behind the small drill racks, there is a tier of bins, all of which are properly labelled and contain various tools or articles of repair shop equipment that is apt to be called for by a workman at any moment. Below are larger bins for the larger articles of equipment, and between the larger lower bins and the upper ones is a shelf upon which wheel pullers, gauges, lettering sets, punches, etc., are neatly arranged. The tool rack at the right is



FIG. 1—AN ORDERLY AND WELL EQUIPPED TOOL AND STOCK ROOM

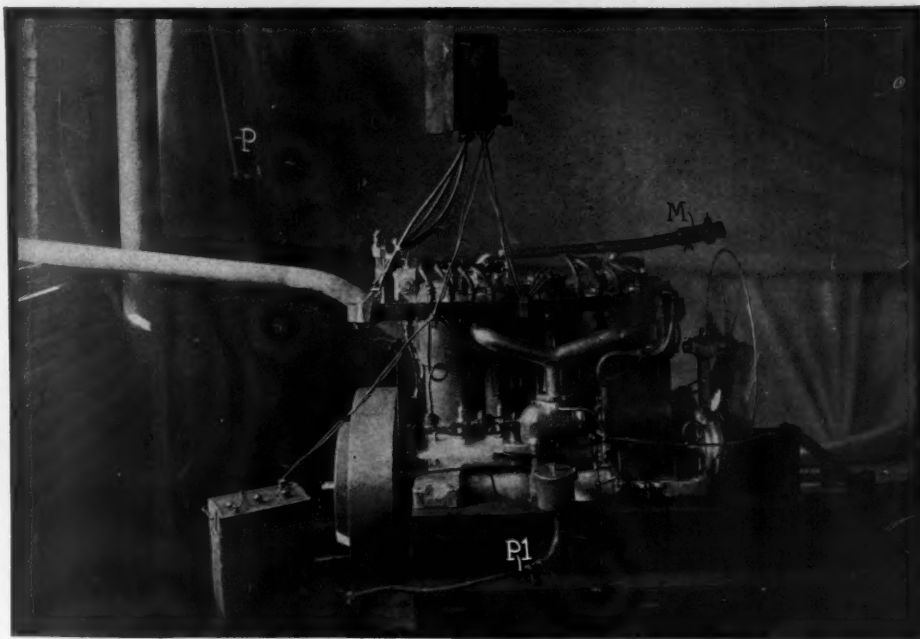


FIG. 2—BLOCK FOR RUNNING IN MOTOR AFTER AN OVERHAULING

conspicuous enough to require but little description. A close examination of this rack, however, will show many interesting and useful articles of equipment. Below this rack is a row of drawers for small, bulky tools, and for nuts and bolts most often called for. Just below these drawers tills are arranged for still larger articles. In the background is shown the design of tills employed for storing extra parts in a systematic manner. Each of these tills is labelled and an excellent stock-keeping system is maintained in connection with

them. This makes it possible for the stock-keeper to find things quickly and thereby increases the department's efficiency.

## Peerless Motor Stand

As many of the motor car agencies throughout the country are installing motor stands for the purpose of running in and testing motors after they have been overhauled, a few hints as to the arrangement and construction of such a stand might be obtained from Fig. 2, which shows the stand employed in the Peerless branch, Chicago. The coil of the ignition system with the switch upon it is attached to a board suspended from the ceiling and arranged directly over the stand so that when the stand is unoccupied the wires may be wrapped around the coil and the whole outfit arranged in an out-of-the-way position. When a motor is being tested an extension is fitted to the exhaust pipe and this extension conducts the exhaust out of the window of the building. The battery used in starting may be placed in almost any convenient position near the motor and the gasoline supply is obtained from a small can which may be suspended from the motor itself, from the board that supports the coil or from almost any convenient place. It is simply an oil can with a nipple soldered to it for connection to the gasoline supply pipe P1. As for the cooling, a hose communicates between the pipe P and the water pump of the motor, and another hose conducts the water from the outlet manifold M to the wash-rack, which is conveniently near the testing stand. Thus, when a motor is in operation a continuous stream of cool water passes through the waterjackets of the motor.



# From the Four Winds



**STARTING Right**—The progressive city of Fort Atkinson, Wis., which has a live motor club, has an ordinance, just passed, fixing rules of the road, speed limits, etc., the whole being in conformity with the state laws covering such cases.

**More Route Signs Planned**—The Automobile Club of Syracuse plans soon to place route signs throughout the newly completed stretch of state road between Syracuse and Utica, N. Y., nearly 100 miles in length. The newly formed Utica club may assist in the project at that end.

**Ohio Climbs to Second**—Ohio is second among the states of the union in the number of motor cars in use. In the report of licenses issued by the various states up to October 1 the Buckeye state nosed Pennsylvania out by more than 2,000. New York leads with upwards of 80,000 licenses and Ohio is second with 45,421. Pennsylvania reported 43,074.

**Long Run in a New Cole**—The first of the new 1912 Cole 30-40 model roadsters left Indianapolis last week over the road for Douglas, Kan. W. K. Matthews, general manager of the Cole Motor Car Company, Kansas City, Mo., who drove the car, and C. P. Blood of Douglas, Kan., the new owner, were given an ovation by officials of the Henderson Motor Sales Co. before starting on their trip.

**Turkey Run a New Idea**—A novel contest in the form of a turkey run to Egg Harbor City, N. J., has been planned for Thanksgiving day by the Lu Lu Temple Automobile Club, of Philadelphia. Prizes are to be awarded to the best guessers as to the number of cars checking in and the time of the run. At Egg Harbor City a Thanksgiving dinner will be served. Officers of the organization will be voted for in December, among those nominated for election being Joseph Way, president; Charles L. Martin, vice-president; William C. Burk, treasurer, and A. T. James, secretary.

**Club Sends Bulletin**—The Automobile Club of Maryland has adopted the plan of sending out suggestions to its members in the shape of bulletins. It appeals to the members to write to the senators from Maryland and the congressmen representing the state to ask them to favor the measure providing for the Lincoln memorial highway from Washington to Gettysburg. It has asked those members living in Baltimore county to vote for the measure to be submitted to the people of the county for their approval calling for a \$1,500,000 bond issue to construct 20 miles of hard road in each of



NEW COLE ROADSTER STARTS LONG ROAD JOURNEY

the 15 districts of the county. The bulletins also warn the members against dangerous railroad grade crossings, speed traps, etc.

**Columbus Has Signboard Fever**—The Columbus Automobile Club of Columbus, Ohio, proposes to spend \$1,000 during the coming winter and spring for road and danger signs to be placed at convenient points on all of the highways within a radius of 30 miles of Columbus. The signs will be larger than formerly and will be intended to be substantial and legible.

**Motor Kills Odd Business**—Motor cars have not only driven many horses out of business, but they have put a crimp in the operations of the professional cigar snipe hunter, according to Service Director Harry S. Holton, of Columbus, Ohio. Columbus formerly was the home of an aged man who gathered cigar stumps from the cutters and sold them to concerns that converted them into cheap smoking tobacco, but now the old man is out of business, because the gasoline and oil that runs into the gutters from motor cars penetrates the cigar snipes and ruins the tobacco's flavor.

**Baltimore Talking Show**—While no definite plans have been made, the Automobile Club of Maryland and the Baltimore Automobile Dealers' Association are working on the show proposition and expect to announce the dates in the near future. It is known that either the middle or latter part of February is favored but those having charge of the affair in both associations do not care to decide on any definite date until they are sure that the time they select will not conflict with the shows in New York, Chicago, Philadelphia and other large cities. A general meeting of the dealers' associa-

tion will be held in the near future, at which all the dealers in the city will be invited to attend.

**California Club Growing**—One hundred new members were last week added to the rolls of the Automobile Club of Southern California. The high record for membership of the big organization was made during the month of August, when 182 persons signed cards. One hundred and sixty-one members were added in July.

**Will Enforce the Law**—The Ohio motor car department has started in to enforce the section of the law which compels every mechanic and tester to take out a chauffeur's license. Hitherto there has been considerable laxity in enforcing that section of the law, but State License Inspector Patrick Kelly has started out to see that it is carried out. The section concerning dealers' licenses also will be enforced to the letter in the future. This has been evaded in some cases where persons in other lines of business, but who sell motor cars on the side, have failed to take out the proper license.

**Club for Atlanta**—The Atlanta Automobile Dealers and Accessory Association of Atlanta, Ga., has won itself a home. It accomplished the feat by amalgamating with the Transportation Club in a new organization which will be known as the Atlanta Auto-Transportation Club. The full breadth of the scheme that the dealers' association is working on has not appeared in the newspapers yet, but it is planned within the year to absorb the Transportation Club entirely and to make a straight motor car dealers' club out of the affair. It is planned in time to develop this club into a state organization, with non-resident members by the thousands. A further scheme is to acquire the present Y. M. C. A. building for a club-



house. This building will soon be vacated by the Y. M. C. A., and as it is now well equipped for club purposes would make in many ways an ideal location for an automobile club.

**More Nebraska Clubs**—Two more county associations have been added to the Nebraska state association. A meeting was held at Plainview, and the Pierce county club formed with the following officers: P. D. Corell, Plainview, president; O. E. Engler, Plainview, secretary and treasurer, and Woods Cones, Pierce, vice-president. At Creighton, the Knox county club was organized. F. R. Hussmith of Creighton was elected president, and G. W. Wertz secretary and treasurer. D. E. Watkins, secretary of the state association, assisted in forming both clubs.

**Australian Census**—During August 199 motor cars were registered in Sydney, Australia, and in the year about 2,000 new machines will have been in use on the streets of the city. The figures reflect the prosperity of the state, over 3,500 having been registered altogether. The cars registered in August represent property worth approximately \$486,650, estimating the value of each car at \$2,433, a low average. Thus, the total value of the cars registered may be set down at \$8,516,375, and with new cars in the workshops at approximately \$9,733,000.

**Wisconsin Road Enthusiasm**—The new Wisconsin highway commission, created by a law appropriating \$350,000 annually for state aid for highway improvements, will on November 14 put in effect a comprehensive educational plan covering about one-half of the state and with particular reference to the localities that have availed themselves of state aid by appropriating sums for good roads work. The members of the commission and its engineers will address county and town boards on the provisions of the law and on highway improvement in general. Each of the meetings will be made into a good

roads rally and the entire scheme will be one of the greatest value from an educational standpoint that good roads workers in Wisconsin have ever experienced.

**Seattle Club Moves**—Headquarters for the Automobile Club of Seattle are now situated in the Northern Bank building at the corner of Pike and Westlake. Here club members or visiting motorists may obtain all information as to routes, conditions of roads, etc.

**York County's Strength**—Up until October 1 there were 327 owners' licenses issued in York and 165 in York county, Pennsylvania. The number of driver licenses in the city was 110 and in the county twenty. In this time there were fifty-five dealers' licenses taken out in the city and six in the county.

**Hoosier Club Election**—The Hoosier Motor Club, Indianapolis, has been organized permanently, officers having been elected and incorporation papers prepared ready for filing. The club expects to take up the question of posting all roads in the vicinity of Indianapolis with guide signs. Officers of the club are: President, Charles A. Bookwalter; vice-presidents, C. L. Diers, Clarence A. Kenyon and H. H. Rice; secretary, P. P. Willis, and treasurer, Joseph W. Selva. There are said to be 300 applications for membership on file. The club has quarters in the Claypool.

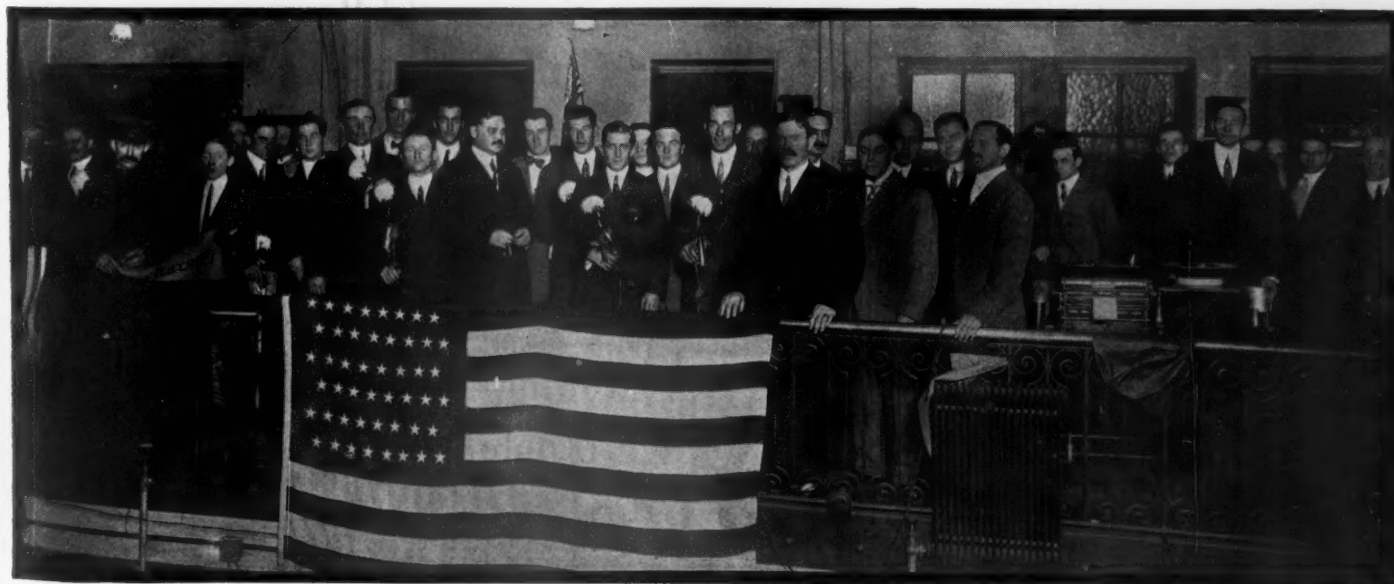
**Milwaukee Club Raises Dues**—The Milwaukee Automobile Club has changed its by-laws to increase the annual dues from \$6 to \$12 per year, as demanded by a large majority of the members. The increase is effective January 1, 1912. The rate of \$6 per year was fixed when the club was first organized, but since a \$25,000 clubhouse is to be maintained, it is realized that \$6 is much too low and \$12 was compromised upon as a reasonable figure. The club has more than 600 members and is campaigning to get 1,000 by January 1. With 600 members the annual income from dues will be \$7,200, sufficient

to maintain the clubhouse and enable the club to do considerable work in the line of good roads, sign-boarding highways, legislation and its other objects which it has in view.

**Maryland Club Active**—The Automobile Club of Maryland has taken active steps to have the road between Perryville and Elkton leading to Philadelphia improved. Interest in good roads among the club members continues and at the next meeting a talk will be given on the subject by a member of the United States good roads commission.

**Medals for the Pullman**—The Pullman car, manufactured by the Pullman Motor Car Co., York, Pa., won three gold medals in competition with American and foreign made cars at the Russian exposition held at Rostov on Don. Three 1912 Pullman models 4-30 cars were exhibited by Uralinis Brothers, the Russian distributors of the Pullman company. In the speed contest held over a measured mile track the Pullman won against all the other cars entered. In the hill-climbing contest the Pullman sustained its reputation as a hill climber and ascended the 1½ hill in 1:47. The average grade of the hill was 21 per cent.

**Milwaukee Organizing**—Legislation will receive a large share of the attention of the Milwaukee Automobile Club under the new administration headed by President Lee A. Dearholt. Charles W. Norris, former president, has been appointed chairman of the legislative committee and he is assisted by James T. Drought, secretary and counsel of the Wisconsin State A. A. and member of the executive committee of the A. A. A.; George A. West, M. C. Moore, president of the W. S. A. A., and former Senator Julius E. Roehr. The committee will concern itself mostly with municipal legislation, as the socialists of Milwaukee are planning much radical legislation restricting the use and operation of motor vehicles.



PRESIDENT BRISCOE PRESENTS REWARDS TO MAXWELL DRIVERS WHO WON GLIDDEN TROPHY

### FOR CARRYING GASOLINE

MUCH interest has been shown in a new oil wagon truck recently put into service by the Standard Oil Co. The truck is a Longest, manufactured by the Longest Brothers Co., of Louisville, Ky., it being one of its standard designs with only a few alterations to evade any danger of igniting the inflammable oil which is carried. The large tank is divided into four compartments, each carrying about 250 gallons of oil; the box on the rear carries the measures, funnels, etc.; the brass rails on the sides carry the excess baggage such as cases, cans of oil and boxes of grease.

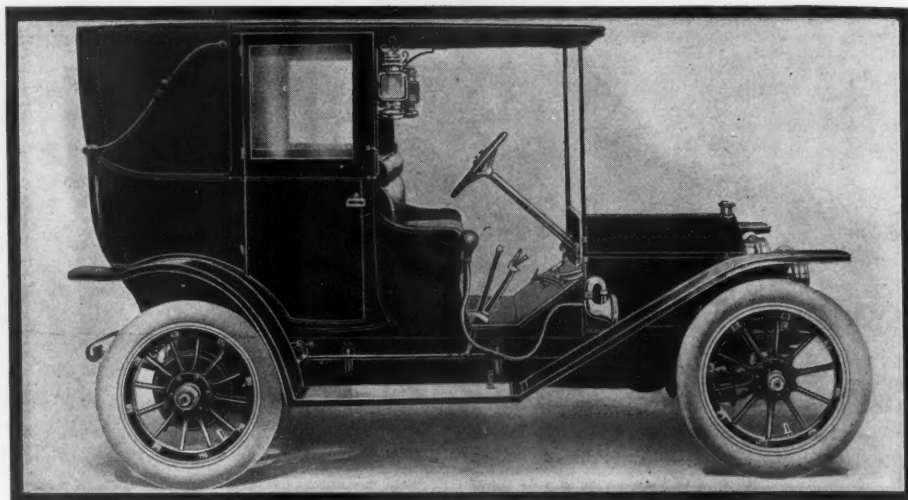
The manufacturer of this truck calls it its 3 to 4-ton model and the mechanical features are as follows: The motor is a four-cylinder, four cycle, with T-head cylinders cast in pairs, 5-inch bore and 5½-inch stroke, 40 S. A. E. horsepower. Bosch magneto and Stromberg carbureter are used. The motor is lubricated by a gear pump submerged in the oil reservoir in the bottom of the crank case, and oil leads are run to all bearings, including cam shafts and push rods.

The clutch used is of the cone type and is leather faced. The transmission is the four-speed selective type, the third speed being the direct and the fourth speed for empty service only. All bearings throughout the wheels, steering spindles, transmission, jack shaft and differential are the Timken roller bearings. Double Timken bearings are used at the outer ends of the jackshaft, also at both ends of the main driving shaft in the transmission. The steering gear is the worm-end nut type with ball bearing thrusts at both top and bottom.

The foot brake operates on both jackshaft drums and the hand brake on both real wheels. Both are metal to metal, and the internal expanding type. The wheelbase is 144 inches and the springs are vanadium steel. The tread is 68 inches. The tires used are 36 by 4 on the front and 36 by 4 dual on the rear.

The governor is of an unusual design and is to govern the speed of the car

# The Realm of the



NEW TAXICAB BROUGHT OUT BY PULLMAN COMPANY

rather than the speed of the motor, the motor speed not being controlled until the truck gets up to the speed where the governor is cut off. The governor is operated by an oil pump on the main shaft of the transmission which furnishes a supply of oil to operate a piston located on the inlet pipe of the carbureter, this piston movement operating a butterfly valve which controls the supply of the motor. The approximate weight of the truck is 7,000 pounds.

### PASSING OF HORSE BUS

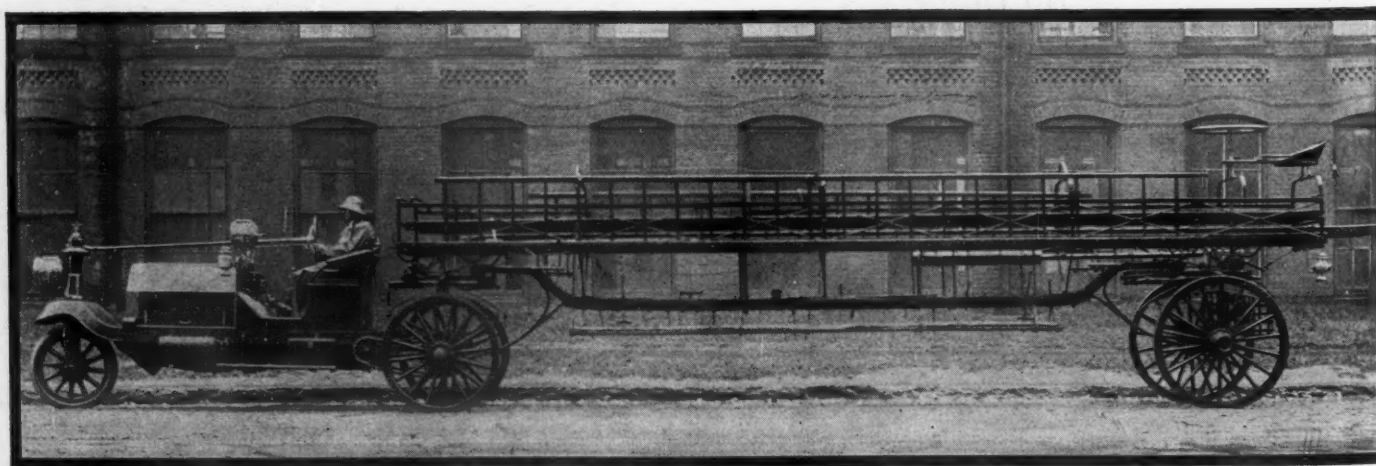
On Thursday, October 26, the few remaining horses belonging to the London General Omnibus Co. completed their last journeys on behalf of that company, and so another step forward in the triumphant progress of motor traction has to be recorded.

On the top of this event is the announcement that the profits of the London General Omnibus Co., Limited, for the year

amount to the enormous figure of \$2,250,000. The capital employed amounts to \$12,500,000, and the passengers carried per week now totals 8,000,000. It is interesting to compare these figures with the amount invested in London surface tramways, namely, \$57,000,000; the number of passengers carried, namely, 11,000,000 per week.

The fleet of motor omnibuses now totals 1,300 in actual service, and new chain and worm-driven silent buses are being turned out at the company's works at the rate of twenty per week.

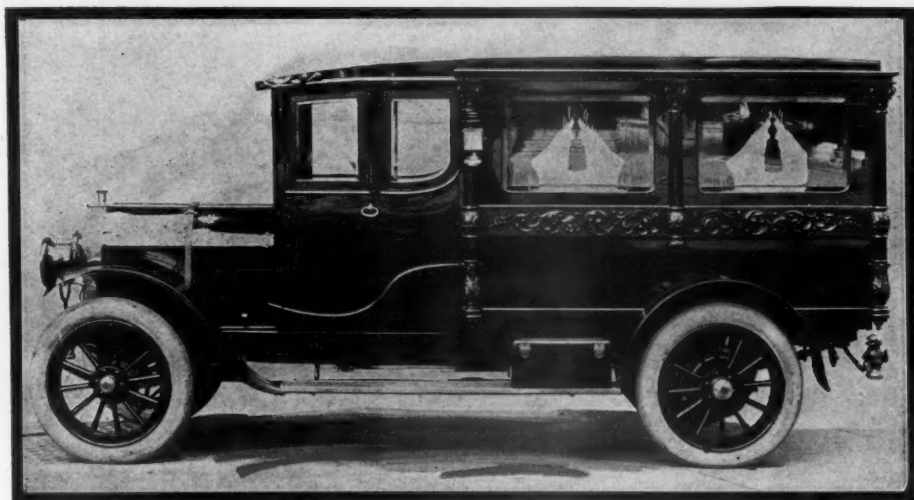
It is curious to record that the London General Omnibus Co. had its origin in Paris in the year 1855, with a capital of 25,000,000 francs. The total amount of capital raised in 1856 was \$2,970,500, only one-fifth of which was subscribed for in England. For several years no dividends were paid, but in 1862, the year of the great exhibition, all arrears were paid off, and consistent prosperity continued until



KNOX EXPERIMENTS WITH OLD HOOK AND LADDER TRUCK



# Commercial Car



MOTOR HEARSE BUILT BY UNITED CARRIAGE CO.

the advent of the motor bus some 6 years ago. The experience has, however, now been paid for, and the present results are far beyond the most sanguine anticipation.

## LIMOUSINES FOR MOURNERS

The United Carriage Co., of Columbus, O., which makes a specialty of building carriages and funeral cars, has turned out a motor hearse which is built along lines which the company believes necessary for such work. Something unique in this line are two ten-passenger limousines intended for the use of mourners at funerals.

## TRYING OUT A TRACTOR

An experiment which will be watched with interest by fire departments throughout the country is being conducted by the Knox Automobile Co., of Springfield, Mass. A hook and ladder truck built in 1861—50 years ago—was borrowed from the fire department of Bridgeport, Conn., by the Knox company for the two-fold purpose of demonstrating the possibilities

of the Martin tractor to fire departments and of showing that the ordinary horse-drawn apparatus with steel tires can be safely drawn at high speed just as well as the more modern rubber-tired vehicles.

The ladder truck is of the medium size, weighing 5,500 pounds, and is the oldest the Knox company could find. It is in good condition, considering its age, although obsolete in design. However, it is serving its purpose of showing whether or not the iron-tired vehicle which does such good work when drawn by horses will stand the strain of high speed.

A single-wheeled Martin tractor which has been attached to the front axle, draws it over the road at 30 miles an hour; slams it over rough places and cobble pavements at 20 miles an hour. Thus far, no weakness has developed, although it has covered more miles already at high speed than the average piece of fire apparatus covers in a year in line of duty, which is abundant proof that our grandfathers

could build good vehicles and that all good things are not the development of the present generation.

## COAST TO COAST TRUCK RUN

Mr. and Mrs. Ralph Barker have successfully completed a coast to coast run in a light delivery Reo motor truck at Empire, Oregon. A few months ago Mr. and Mrs. Barker took a train from their homestead in Empire for their old home in New England, and while there, purchased the Reo truck for their return trip. They left Stratham, N. H., August 10, in their truck which was provided with a touring cover forming a regular living room. With this was included a complete camping outfit which permitted them to pitch their tent wherever and whenever they pleased. Thus, had they happily provided for crossing the vast uplands west of the Mississippi river where the hotel accommodations are none too good or ample.

## NEW PULLMAN TAXICAB

The Pullman Motor Car Co., York, Pa., announces that in addition to its line of pleasure cars it will build taxicabs in the future. With this announcement comes the statement that these taxicabs will be sold direct from the factory to the purchaser.

The Pullman taxicab is no experiment. It is mounted on the 30-horsepower Pullman chassis. The motor is 41-16 by 5. The Pullman cab is fitted with 34 by 4-inch tires and demountable rims.

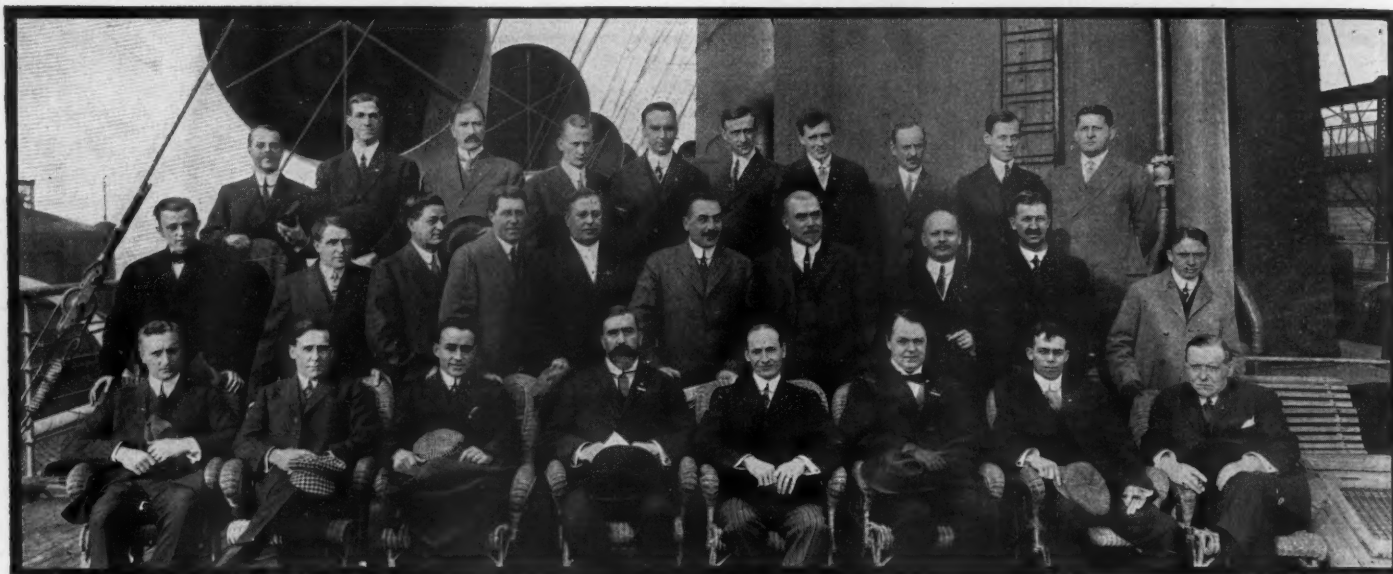
## ARMY TESTS TRUCKS

Motor trucks were tested under regular marching conditions recently at Fort Riley, Kan., accompanying the troops on a march from Fort Riley to Troy, Kan., and return, a distance of 500 miles, requiring 23 days in all. The up trip was the most severe, because it rained steadily for 10 days of this period. The mud became so deep that the trucks were up to the axles in the mire most of the time. A six-mule team was kept fairly busy unstalling the trucks. A White 1½-ton truck was the only one to make the entire trip on its own power. The run was too much for thirty-five horses.



TRUCK BUILT FOR CARRYING GASOLINE BY LONGEST BROTHERS CO.

# Among the Makers and Dealers



SOCIETY OF AUTOMOBILE ENGINEERS STARTING ON EUROPEAN TRIP

**NEW Blue Book Man**—Wilson H. Stoye has joined the Chicago office of the Automobile Blue Book and will handle the advertising department of Volume 4.

**Busy at Franklin Plant**—The H. H. Franklin Mfg. Co. of Syracuse is now taking on mechanics to meet the need occasioned by increased production. Machine departments are working evenings and several hundred skilled machinists will be put on during the coming weeks, it is reported.

**Mitchell in New York**—The Mitchell-Lewis Motor Co. has opened a salesroom with 90-foot frontage at Broadway and Sixty-first street, New York, the second story devoted to executive offices of the eastern branch. In addition to the Broadway store it has just completed a six-story and basement Mitchell service building on West Fifty-fifth street, just around the corner; this building is designed both for storage of parts and cars as well as being equipped with machinery making it one of the most up-to-date repair stations in the country.

**Champion Company Plans**—The Champion Spark Plug Co., Toledo, Ohio, has purchased a 1½ acre building site on the Lake Shore and Michigan Central Railroad tracks, at Upton and Avondale avenues, Toledo, Ohio. Work is rapidly being pushed to completion on a new and modern fireproof plant, steel frame, brick and concrete throughout. The building is 102 by 72 feet, of the monitor type construction. The Champion company also has placed orders for a large addition to its automatic machinery equipment and in its new plant will turn out annually from 1,500,000 to 2,000,000 spark plugs

with a reserve capacity of double that amount. This company is owned by the two Stranahan brothers, Robert A. and Frank D.

**Metzger Goes Abroad**—Carl J. Metzger, general sales manager of the Woods Motor Vehicle Co., has gone abroad. Mr. Metzger will visit the different English and French factories, also the London show.

**Whitesides Election**—Directors of the Whitesides Commercial Car Co., recently reorganized, and which is moving from Franklin, Ind., to Newcastle, Ind., have elected the following officers: President, O. W. Saffell; vice-president, F. M. Whitesides; secretary and general manager, C. W. Boyd, and treasurer and factory manager, J. W. Prigg. The company at Newcastle is occupying the former factory building of the Safety Shredder Co.

**Fall Show for Indianapolis**—Arrangements are being made by the Indianapolis Automobile Trade Association for a motor show to be held November 20-25, the first fall show Indianapolis has ever had. Fred I. Willis, who recently became identified with the Kokomo Rubber Co., Kokomo, has asked to be relieved of his duties as president of the association, and Harry A. Archey, first vice-president, is presiding over the club. It is probable that the association members, during the show, will furnish cars for a free bus service to carry visitors to and from the various sales rooms. Each dealer will exhibit in his own establishment. The association has adopted a resolution against the lending of cars for any purpose, charitable, or otherwise, unless the proposed lending is passed on favorably by the directors. Another resolution

adopted provides that all requests for contributions or advertising for programs, or other things not directly identified with the motor car trade shall be referred to the association's secretary for recommendation.

**Montreal Show Billed**—The Automobile and Aero Club of Canada, Montreal, announces the holding of a show in the drill shed as last year, under the management of E. M. Wilcox. The show generally is held in the early spring but the motor business in Montreal has developed to such an extent that the management is considering the advisability of holding the show during the latter part of January or early in February. This probably will put the Montreal show ahead of the Toronto show.

**Philadelphia Announces Dates**—The Philadelphia Automobile Trade Association announces it will hold the Philadelphia show from Saturday, January 13, to Saturday, January 27, 1912, inclusive, again this year in the two armories used last year for the show. These are the First Regiment armory uptown and the Third Regiment armory downtown. The show will extend over 2 full weeks, that in the First Regiment armory being devoted for the first week to gasoline pleasure cars and that in the Third Regiment armory to gasoline pleasure cars and accessories. For the second week there will be shown electrics exclusively in the First Regiment armory, along with a general exhibition of such electrical devices as apply to the motor car, such as lighting, self-starting appliances, batteries, rectifiers, etc. For the second week at the Third Regiment armory commercial cars



of all classes, both gasoline and electrics, will be shown. The officers of the show, as appointed by the association, are: George W. Hipple, president of the Philadelphia Automobile Trade Association, as chairman; Frank Eveland and J. A. Wister. The show will be under the management for the fifth consecutive year, of J. H. Beck.

**Overland a Big Plant**—During the past summer extensive alterations and additions have been made to the Overland plant, at Toledo, bringing the total floor space up to 60 acres. In the background of the accompanying illustration is shown the mammoth new addition which will be used for body building, trimming and paint departments. The building is 300 by 400 feet in dimensions and four stories high with basement. Other buildings which have been erected include a new power house which adds 300 horsepower, a dry kiln, which has a capacity of 1,250,000 feet of lumber at one time, an enameling shop and other smaller buildings.

**Milwaukee Changes Dates**—The Milwaukee Automobile Dealers' Association has decided to hold its second annual motor show in the Auditorium beginning on January 13 and closing on January 19, instead of from January 20 to 26, as previously announced. More than 65,000 square feet of floor space will be used for the 1912 show, which is the fourth to be held in Milwaukee. The first two shows were given by the Milwaukee Automobile Club. Only cars represented by Milwaukee county agencies will be permitted in the display, as last year, when fifty-three pleasure car makers and seventeen commercial vehicle manufacturers were represented. Since last January, twenty-nine additional pleasure cars have gained rep-

resentation in the city and fourteen more commercial car builders have been added to the list handled here. Frank J. Edwards has been appointed chairman of the show committee and Bart J. Ruddle will again act as general manager of the Milwaukee show.

**Knox Company Election**—At the annual meeting of the Knox Automobile Co., of Springfield, Mass., the stockholders found the business had been conducted so well by the present officers that no change was made and so these men still retain their positions as follows: Charles L. Goodhue, president; William E. Wright, vice-president; A. N. Mayo, treasurer; Albert E. Smith, assistant treasurer; Charles E. Beckwith, secretary; directors, A. N. Mayo, Charles H. Beckwith, Charles L. Goodhue, William E. Wright, Peter Murray, E. C. Johnson, of Hartford, Conn.; H. Willis Cutler, of North Wilbraham; Marcus Greenwood, of Gardner, and William H. Chase, of Leominster.

**Lavinge Company Organized**—The organization of the Lavinge Mfg. Co., of Detroit, Mich., has been consummated in which the Lavinge steering gear which formerly was manufactured by the Lavinge Mfg. Co., has been taken over into a new corporation, which will be known to the trade as the Lavinge Gear Co. The new company has been organized with a capital of \$100,000, with offices at Detroit and Milwaukee. In addition to the Detroit plant, it will operate a larger plant for the manufacture of the steering gear exclusively at Corliss, Wis., which is a suburb of Milwaukee on the main line of the Chicago, Milwaukee and St. Louis Railroad. This new plant is 480 feet by 55 feet, and equipped with new modern tools, and will have an annual capacity of

from 35,000 to 50,000 complete steering gears. Joseph P. Lavinge, designer of the steering gear, will remain with the company as its chief engineer.

**Craig Joins Enger**—Charles C. Craig, formerly manager of the Chicago Haynes branch, has been appointed sales manager of the Enger Motor Car Co. of Cincinnati.

**Cameron Planning to Enlarge**—The makers of the Cameron car at Beverly, Mass., are arranging to enlarge their plant upon the receipt of more capital and offers have been made to them by another concern to consolidate. The company has just received word from abroad that in the closing race meet at Brooklands, Eng., the 70-miles-per-hour handicap was won by one of its 20-horsepower cars from a field of fifteen starters.

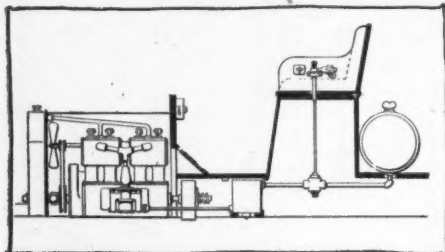
**February Date for Omaha**—The annual meeting of the Omaha Automobile Show Dealers' Association was held last week. It was decided to hold the Omaha show some time in the latter part of February. In previous years the show has been held at the Auditorium, and the dealers have been cramped for space. This year the association is planning to hold the show at the Coliseum, the home of the Knights of Ak-Sar-Ben of Omaha. The floor space in the Coliseum is about double that of the other building, although it is not so centrally located. As an indication that the show would be bigger and better than ever, twelve new members were admitted to the association, all of whom desire to exhibit cars at the show. The following officers were elected: J. J. Deright, president; J. T. Stewart, vice-president; Clark G. Powell, secretary and treasurer. The board of directors includes the officers, and Guy L. Smith and Denise Barkalow. Mr. Powell will be manager of the show again.



BIRD'S-EYE VIEW OF BIG OVERLAND PLANT AT TOLEDO

# Current Motor Car Patents

**GASOLINE Cut-Off Valve**—No. 1,006,353, dated October 17; to John D. Buckalew, Topeka, Kan.—This patent pertains to a combination of a valve body for connection with the fuel fuelpipe of the ve-



BUCKALEW CUT-OFF VALVE

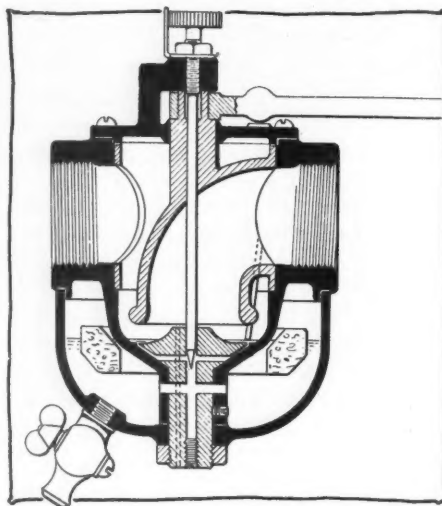
hicle, this feedpipe having connection thereto to an auxiliary tank disposed between the valve body and the engine of the vehicle, a valve rod connected to the valve body, and a handle formed on the upper end of the valve rod, this handle being provided with an opening adapted to receive a staple equipped with a padlock so that the valve body will be substantially locked.

**Kries Carbureter**—No. 1,006,387, dated October 17; to Oscar C. Kries, Jr., Detroit, Mich.—This patent relates to a float-feed type of carbureter, having in combination a mixing chamber, an annular delivery opening for gasoline opening into this chamber, a rotating member adapted to regulate the area of the passage through the mixing chamber and adapted to turn about an axis concentric with the annular delivery opening, and a pipe in the rotary member having one end adjacent to and directed toward the annular opening, and its other end opening at the side of the rotary member and communicating with the outer air when the rotary member has partly closed the passage through the mixing chamber.

**Shields and Lamb Valve Mechanism**—No. 1,005,897, dated October 17; to John

S. Shields and William Lamb, Detroit, Mich.—This patent covers a mechanical movement for engine valves, the combination with a plurality of valves and their operating mechanism, ratchet disks fixedly mounted on the stems of the valves, springs for normally holding the valves in a closed position, a fork spring pawl intermediately disposed between the valves, the arms of which are angularly arranged and have their free ends in engagement with the ratchet surfaces of the disks, whereby the valves are rotated as they descend.

**Hippisley Carbureter**—No. 1,006,088, dated October 17; to Arthur Hippisley, Bath, England.—This patent relates to a carbureter comprising a casing a hollow



THE KRIES CARBURETER

ring concentrically disposed within the casing and being provided with a plurality of symmetrically arranged outlets, a rotatable sleeve carried by the ring and the casing, the sleeve forming a central air passage and having ports of different lengths adapted to progressively cover or uncover opposite jets in pairs.

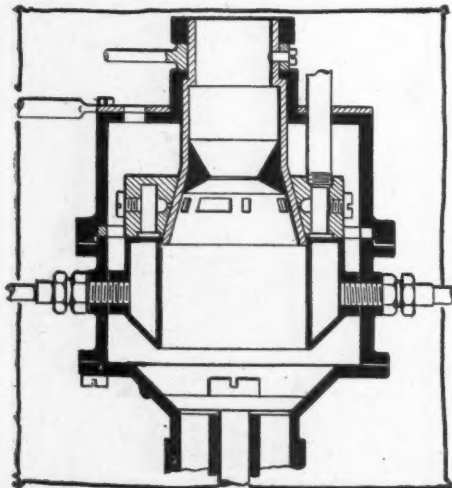
**Cogil Windshield**—No. 1,004,850, dated



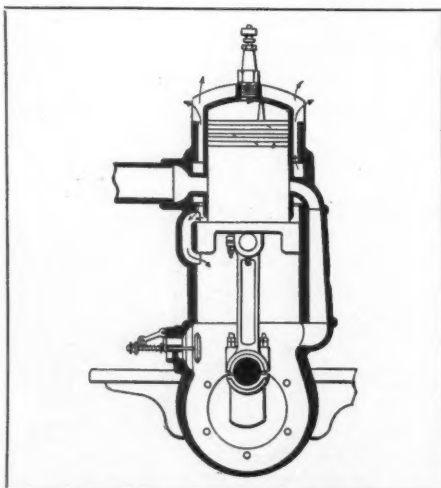
THE COGIL WINDSHIELD

October 3; to Joseph Cogil, Central City, Neb.—As illustrated herewith this patent pertains to a windshield comprising a body frame and a head frame, means for connecting these frames together, a frame covering for these frames, a transparent member carried by the frame covering over the head frame and means of attachment.

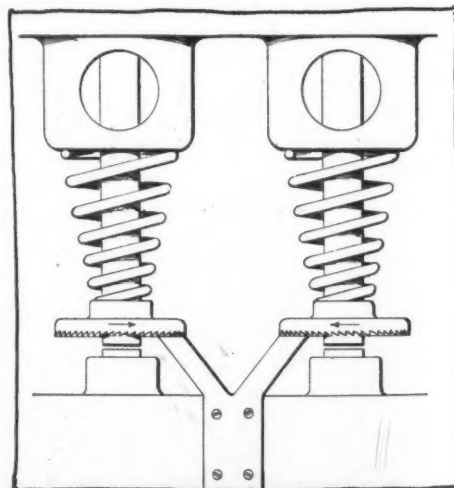
**Wolcott Air-Cooled Two-Cycle Engine**—No. 1,004,836, dated October 3; to Alvin E. Wolcott, Lowell, Wash.—As illustrated herewith this patent relates to an air-cooled two-cycle engine, having in combination an explosion cylinder, a piston working therein, a compression or circulating cylinder of larger diameter than the explosion cylinder, a passage connecting these cylinders to convey the compressed air from the compression cylinder to the explosion cylinder when the passage is opened, and a piston formed integral with the piston in the explosion cylinder and fitting the compression cylinder so that a greater volume of cold air is forced into the explosion cylinder than is displaced by the piston therein.



THE HIPPISELEY CARBURETER



WOLCOTT TWO-CYCLE MOTOR



VALVE ROTATING MECHANISM.





# Development Briefs

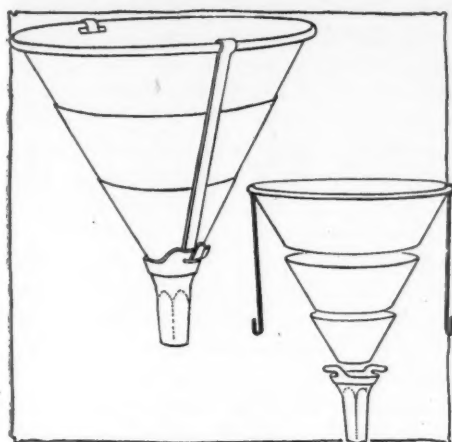


FIG. 1—SECTIONAL FUNNEL

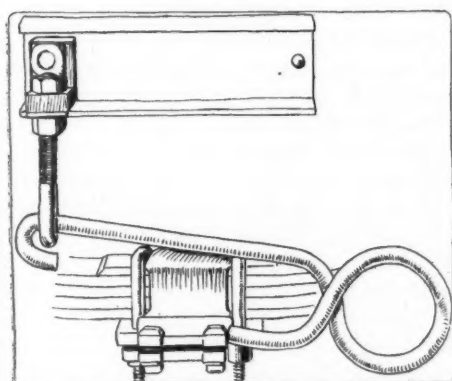


FIG. 2—IDEAL SHOCK ABSORBER

## Spring Shock Absorber

ONE of the latest devices in the line of supplementary springs designed to assist the regular springs in sustaining the load and more particularly to overcome the rebound of the body is known as the Ideal shock absorber. It is illustrated in Fig. 2 and is marketed by the American Sales Co., Detroit, Mich.

The shock absorber consists of a round bar of spring steel, bent into a loop with one end longer than the other. The shorter end is clamped to a special seat on the spring over the axle and the end of the longer portion is formed into a hook. This hook passes through an eye-bolt on the frame. When being installed the supplementary springs are spread out from  $1\frac{1}{2}$  to 2 inches beyond their normal position, thus causing them to be under tension. This eliminates the tendency to rattle that would be present were they not under strain.

When the axle rises toward the frame, the supplementary spring does not oppose this action until the movement becomes greater than  $2\frac{1}{2}$  inches, after which it tends to assist the regular spring in holding the frame up. On the rebound, however, the shock absorber exerts a restraining force as soon as rebound begins.

Adjustment is provided for by changing the distance the eye-bolt hangs below the frame. When once the correct adjustment is obtained no further attention is needed. The shock absorbers are adaptable to any car although the same one will not fit every car. They are said to be guaranteed against breakage for 5 years.

## Sectional Funnel

There are times in the experience of every driver of a motor car when a funnel that is clean and free from dirt is needed very badly. It is then that he finds how difficult it is to carry such a utensil in the tool box without its getting dirty. He also finds that it takes up more storage room in the car than almost any other tool he can carry.

A funnel which has the double advantage of allowing itself to be packed away in a clean dirt-proof case and taking up little room is the Best sectional funnel, made by R. L. Best, Bismarck, N. D. It is illustrated in Fig. 1—ready to use at the left and partially dissembled at the right. It consists of three conical sections, the lower portions of which telescope into the upper portion of the next smaller section. The smallest section fits into the upper end of a bottom or spout section.

The sections are locked into place to make the complete funnel by two arms hinged to the upper rim. The hooked ends of these arms engage hooks in the spout section to wedge the parts tightly together, making a gasoline-tight joint. A chamois skin for straining the water out of the gasoline can be placed between the first and second sections where it is wedged in place.

When not in use the sectional funnel nests away into a tin box but little larger than the largest section, a  $7\frac{1}{4}$ -inch funnel requiring a box  $7\frac{1}{4}$  by  $2\frac{1}{2}$  inches in size. The funnel is made of 26 gauge steel and is nickel plated.

## New Spring Wheel

One of the latest methods for providing easy-riding qualities in the car without the resort to pneumatic tires is illustrated in Fig. 4. This is the Leap spring wheel made by the Leap Resilient Wheel Co., Chicago. In construction, the resiliency is obtained by the design of the spokes. These spokes S are curved vanadium steel springs. They are fastened at their inner ends to the hub by means of the pins H, and at their outer ends are attached to shoes S1 which slide upon the inner edge of the rim R.

When the wheel hits a bump, the spokes under compression bend and the shoe slides along the rim, thus taking up the shock without transmitting it to the car body.

The individual spokes are kept under the proper tension by means of an eccentric E mounted by a bolt B on the hub flange and held in place by a lock L.

## Bull's-Eye Spark Plug

When a motor starts to miss, the first step toward remedying the trouble is usually an examination of the spark plugs, primarily to ascertain if poor ignition is the cause, and secondly to find which cylinder is at fault. To assist in locating and diagnosing ignition trouble, a spark plug has been brought out which is fitted with three small windows through which the spark in the plug may be seen.

These windows are made of a transparent crystal and are located on the hexagon nut of the plug. If the cylinder is dead, then, of course, the little windows are dark; if it is working properly, a blue light will be visible; and if a bad mixture obtains, a yellow light will be seen. The crystal ports are guaranteed against breakage. The plug is illustrated in Fig. 3. It is marketed by the C. G. Blickensderfer Co., Stamford, Conn.

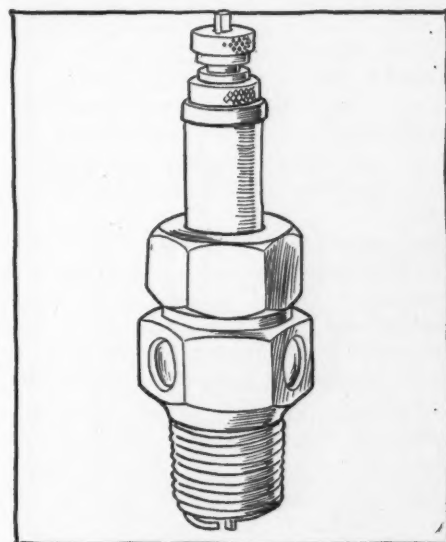


FIG. 3—BULLS-EYE SPARK PLUG

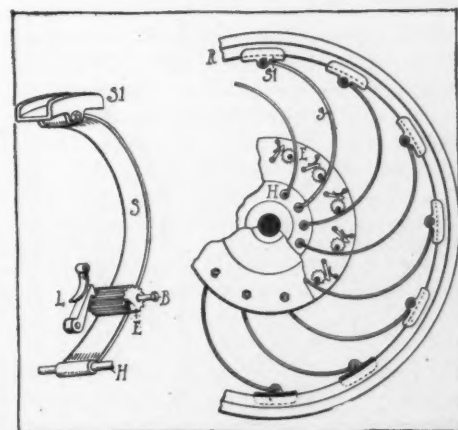


FIG. 4—LEAP RESILIENT WHEEL

**ALTOONA, PA.**—A. M. Jacobs has taken the agency for the Klinekar.

**Johnstown, Pa.**—The Atlas Motor Car Co. has added the Klinekar line.

**Hillsboro, O.**—R. D. Currie's garage has taken the local agency for the Buick for 1912.

**Akron, O.**—The Jones Auto Co., of 53-55 South High street, has taken the agency for the Hudson for 1912.

**Milwaukee, Wis.**—The Spring Bearing Truck Co. has increased its capital stock from \$10,000 to \$20,000 to care for extensions of the business.

**Washington, D. C.**—The Waverley electric agency has been placed with the Luttrell Co., Dupont circle and Connecticut avenue. This company also handles the Packard.

**Muscatine, Ia.**—Bowman Brothers have enlarged their garage and salesroom on Front street and have contracted with the Buick company for its line for 1912 for Muscatine and Louisa counties.

**Syracuse, N. Y.**—The Franklin Automobile Co.'s local business will be handled hereafter at the factory in South Geddes street. The branch for 2 years has been at 242 Sast Water street.

**Boston, Mass.**—F. L. Sanford has joined the sales force of the Henley-Kimball Co., and he has been given charge of the wholesale department for outside territory on Hudson cars.

**Boston, Mass.**—The new Alco branch is now located in Copley square, with George M. Hudson as manager. The branch has leased quarters in the Shoe and Leather building in Cambridge for a service department.

**Boston, Mass.**—The Lawrence & Stanley Co., which has taken on the Mitchell for Boston and vicinity, will use the Columbia road garage, Dorchester, which it has controlled for a number of years for a service station and garage for the Mitchell product.

**Muncie, Ind.**—Thomas J. Heller, formerly sales manager of the Standard Roller Bearing Co., has joined the forces of the Warner Gear Co. as eastern factory representative, with headquarters at Glenwood avenue and Second street, Philadelphia.

**Des Moines, Ia.**—The Iowa Auto and Supply Co., the pioneer firm in the Des Moines motor car field, has announced the erection of a two-story brick. The new building will be on the site of the present quarters, Fourth and Grand avenue. The Iowa company was recently merged with the Keystone Automobile and Supply Co.

**Beaver Dam, Wis.**—E. O. Parker, president of the Waldron Automobile Mfg. Co., of Waldron, Ill., is negotiating with the Beaver Dam Advancement Association for the removal of the plant to this city. The company manufactures a combination motor car for business and pleasure purposes, farm tractor, stationary engine, etc.

## Brief Business

Beaver Dam is an agricultural implement center.

**Wauseon, O.**—William Valentine and Claude Lawer have opened a repair shop on Commercial street.

**Milwaukee, Wis.**—The Federal Rubber Co., of Cudahy, has purchased a site for a new office building which will cost \$18,000.

**Columbus, O.**—Frank J. Girard, 174 North Fourth street, has taken the agency for the R. C. H. in twenty counties in central Ohio.

**Baltimore, Md.**—The Oakland Sales Co., representative for the Oakland car and Federal truck in Baltimore, has moved to its new quarters at 6 and 8 East Chase street.

**Columbus, O.**—The Hudson Sales Co., agent for the Hudson in thirteen counties in central Ohio, has been made distributor for the Hudson in twelve additional counties.

**Baltimore, Md.**—The Lambert Automobile Co. is now located in its spacious new quarters at Maryland and Mount Royal avenues. The firm handles the Maxwell, National and Hudson cars.

**Washington, D. C.**—A change has been made in the Lozier agency in Washington and the Lozier 1912 line of cars will, in the future, be handled by the Lozier Sales Co., of 1315 H street, N. W.

**Savanna, Ill.**—J. D. Fulrath has opened an opera house in connection with his garage and, while using the daylight hours in selling Buicks, will attend to the entertainment of the citizens of Savanna at night.

**Oshkosh, Wis.**—H. C. Doman has disposed of his interest in the H. C. Doman Co., manufacturing motors and engines, and will retire. The new owners of his interest are Phil. H. Sawyer and Edgar P. Sawyer, well-known manufacturers of Oshkosh.

**Louisville, Ky.**—Arthur W. Ellis, of Indianapolis, is the new manager of the Louisville branch of the Goodyear Tire and Rubber Co. He succeeds Robert B. Harbison, who has resigned. James B. Williams, of Harrodsburg, has been chosen to fill the position of office manager formerly held by Robert Graybill.

**LaFayette, Ind.**—The Esterline Co. announce the appointment of the following sales representatives: Mortimer L. Newman, 114 Liberty street, New York; Automobile Specialties Co., Atlanta, Ga.; Symonds-Berles-Kirkpatrick Co., San Francisco and Los Angeles, Cal.; Charles F. Saenger & Co., Cleveland, O.; Standard Engineering Co., 53 State street, Boston, Mass.; 810 Chapel street, New Haven, Conn., and 16 East Main street, Water-

bury, Conn.; Western Engineering and Specialties Co., Denver, Colo.

**Buffalo, N. Y.**—A. W. Meyer, Buffalo, has taken the agency for the 1912 line of Pullman cars in Buffalo and northern New York.

**Milwaukee, Wis.**—The Gas Power Engineering Co., Third and Wright streets, Milwaukee, has been appointed distributor for the Premier.

**Watertown, Wis.**—G. H. Hafmeister has opened a garage and repair shop in the former Wing livery stables at 211-213 Third street. He will represent the Ford in this territory.

**Columbus, O.**—The Hudson Sales Co., North Fourth street, has taken the agency for the Buick for 1912 in Franklin and Licking counties, Ohio. A sub-agency will be established at Newark, Ohio.

**Rockford, Ill.**—The F. L. Miller Auto Co., on East Second street, has taken on the E-M-F and Flanders lines in conjunction with the Buick for 1912, and announce a new line of trucks for the coming season.

**York, Pa.**—The York Garage and Supply Co., 116-118 East Market street, one of the largest garages in the city, has recently remodeled the front of the building and is now occupying the room for an office.

**Fremont, O.**—Harry Bowlus, formerly employed in the factory of the Gramm Motor Car Co., of Lima, O., has accepted the position of superintendent of the factory of the Lauth-Juergens Motor Car Co., of Fremont.

**Spokane, Wash.**—The Spokane Everitt Motor Car Co. has moved from 1022 First avenue to 232 Sprague avenue. Fred S. Beckwith, newly appointed Abbott-Detroit agent, has established temporary quarters at 1209 First avenue.

**Denver, Colo.**—J. A. Fry, for many years branch manager for the Apperson Brothers in Chicago and until recently connected with the Fry & McGill Auto Supply Co., of this city, has assumed the position of manager of the sales department for the Everitt branch in Denver.

**Des Moines, Ia.**—H. B. Groves, former manager of the United States Motor Co.'s Des Moines branch, today announced that he had secured the local agency for the Apperson and Reo cars and would move into the quarters which are now being vacated by the United Motors Des Moines Co. The Strong Motor Co. formerly had the Apperson agency and for many years the Sears Auto Co. has represented the Reo in central Iowa. Mr. Groves will





# Announcements

divide his time between his Sioux City and Des Moines branches. George Jamieson will be the Des Moines manager.

**Bluefield, W. Va.**—W. E. Moore has signed up as Franklin dealer for this vicinity for the coming season.

**St. Louis, Mo.**—The Mound City Buggy Co. is to handle the Jackson in a wide territory around St. Louis.

**Janesville, Wis.**—The Monitor Auto Truck Works is among the exhibitors at the made-in-Janesville exposition to be held November 21 to 28.

**New London, Wis.**—George Rohde has opened a garage and repair shop in the Rogler building, and in the spring will establish a motor livery.

**Wilkes-Barre, Pa.**—William S. Lee, of this city, has taken on the Ohio line of cars and for the coming season will handle the Ohio and Hudson exclusively.

**Fond du Lac, Wis.**—The Crescent Garage Co., North Main street, has broken ground for the new addition, which will be 65 by 130 feet in size. The addition will make the Crescent garage one of the largest in the middle west.

**Dodgeville, Wis.**—Trache & Woerpel, of Madison, Wis., have leased quarters here for a garage and salesroom. The company represents the White, Reo and Buick cars. A general livery business will also be transacted.

**Syracuse, N. Y.**—M. P. Powell has sold his interest in the American Motor Sales Co. to Victor Vernon, of this city, who takes complete ownership of the concern and will act as its manager. The American line will be handled.

**Wilmington, Del.**—The Auto Sales Co., 306 Washington street, has arranged to handle in Delaware the Krit car, also the Rambler. White Brothers, of Front and Orange streets, are handling the International motor truck, having taken the agency for Delaware.

**Boston, Mass.**—The J. W. Maguire Co., agent for the Pierce-Arrow in eastern Massachusetts, has again been forced to extend its salesrooms, and has secured a lease of the premises next door to its present site, giving it one of the largest salesrooms on Boylston street.

**Boston, Mass.**—The Standard Tire and Rubber Co., at 104-106 Portland street, has changed the name of its uptown branch in the motor district from the Percy Ford Auto Supply Co. to the Standard Auto Supply Co., and its officers are: William P. Cronin, president; James S. Waddell, vice-president; Vincent J. Mulhern, treas-

urer. The uptown branch, while a part of the parent concern, is conducted as a separate company.

**Washington, D. C.**—Earl & Allen, who are agents for the Hupp-Yeats electric, have secured the R. C. H. car.

**Laurinsburg, N. C.**—The Franklin Automobile Co. will continue to be represented in this vicinity the coming season by the Herndon Motor Car Co.

**Washington, D. C.**—The Overland-Washington Motor Co. has been appointed agent for the Garford in this city and the surrounding territory.

**Plymouth, Wis.**—William Radloff has established a plant here for vulcanizing and repairing tires. A large steam vulcanizing outfit has been installed. It is the first shop of its kind here.

**Pittsburgh, Pa.**—The Pittsburgh branch of the Franklin Automobile Co. signed up two sub-dealers in this territory during the week—the Coraopolis Garage Co., of Coraopolis, Pa., and S. F. Carpenter, of Carbondale, Pa.

**Baltimore, Md.**—Work on the new garage of James W. Bowers, 1129 Cathedral street, has begun. It will be of concrete construction and its dimensions will be 88 by 120 feet. The construction alone will cost \$40,000.

**Washington, D. C.**—The Pope Automobile Co., agent for the Pope-Hartford and Columbus electric, has been appointed agent for the Marathon in the District of Columbia, Maryland, Virginia and West Virginia.

**Des Moines, Ia.**—The Brown-Corley-Ellis Co., local agent for the Marmon and Paige-Detroit cars and Kelley trucks, has started the erection of a two-story brick block at Fourth and Grand avenue which is to be completed in 60 days. C. B. Ellis has recently retired from the concern but the firm name remains unchanged.

**Geneseo, Ill.**—Weimer's garage has taken on the Overland line for part of Henry county. I. N. McBroom has taken on the entire Clark line for all of Henry and part of Mercer counties for the coming season. The Geneseo garage has made arrangements with the P. W. Kempster Co., of Prophetstown, Ill., to handle part of Henry county on the Buick line.

**Indianapolis, Ind.**—W. R. Griffin, of Stockton, Kan., has made arrangements to handle the Cole. Leadley Brothers, of Rozel, Kan., also will handle the Cole. Herbert Ellis, 24 Amesbury street, Lawrence, Mass., will sell the Cole. Two new Cole agents in Indiana are the Gist Auto Co., Union City, and the Hollett Winders Grain Co., Arcadia, Ind. The Kewanee garage, Kewanee, Ill., has taken on the

Cole line. R. Bruce Carson has completed arrangements to handle the Cole at Hagerstown, Md.

**Marinette, Wis.**—The Twin City School of Motoring has been established at 1351 Main street by Myron Churchill.

**St. Louis, Mo.**—The Kisselkar branch, of which George Dunville is manager, has taken new quarters at 3008 South Grand avenue.

**Columbus, O.**—The contract has been awarded for a large addition to the plant of the John W. Brown Mfg. Co., of Columbus, Ohio, maker of lamps and other accessories.

**Chicago**—The Buda Co. has arranged with Brandenburg & Co., located at 1108 South Michigan avenue, Chicago; Fifty-seventh street and Broadway, New York city; and Ford building, Detroit, Mich., to sell its products, consisting of motors, transmissions and other parts for motor cars.

**St. Louis, Mo.**—The United States Tire Co. has consolidated the Morgan & Wright, Hartford and Continental branches in St. Louis, and until new quarters at Compton avenue and Locust street are completed the salesrooms will be maintained at 538 North Vandeventer avenue, the Morgan & Wright depot. P. B. Simmons is in charge of the branch.

**Boston, Mass.**—The United States Motors Co.'s Boston branch has decided to have the Stoddard-Dayton branch, recently closed from an agency, moved into the building on Massachusetts avenue at the corner of Newbury street, where the Maxwell, Brush, Sampson and Columbia are handled, so that all the products will be together.

**Omaha, Neb.**—A two-story garage and salesroom is being erected at Fortieth and Farnam streets, for the Electric Garage Co., dealer in the Rauch & Lang and Baker electrics, and the Packard. This is the first garage to be built in the residence district, being in one of the most fashionable districts in the city. The garage will be 89 by 132 feet.

**Indianapolis, Ind.**—A number of changes have taken place in the Indianapolis trade. The Case factory sales branch has been moved from North Capitol avenue to 241 Kentucky avenue. A. W. Ellis, city salesman for the Goodyear tire sales branch, has been transferred to manager of the Louisville branch. Frank Staley has become Indiana distributor for the R. C. H., with headquarters at 513 North Capitol avenue. W. W. Brewer and E. L. Baker, Indiana distributors for the Baker electric, have dissolved partnership and the business will be continued by Mr. Brewer, Mr. Baker having become a national representative for the Hupp-Yates. Walter W. Bond has taken a position as salesman with the Baker agency. Charles Leavy, formerly of Buffalo, has assumed charge of the repair department of the sales branch of the Buick Motor Co. A factory sales



branch of the Schact Motor Car Co., Cincinnati, Ohio, has been opened at 328-330 North Delaware street.

**Kansas City, Mo.**—The Auburn Motor Car Co. has removed to the southwest corner of Sixteenth and Grand avenue.

**Philadelphia, Pa.**—Edwin H. Lewis has become associated with the factory sales department of the Lewis J. Bergdoll Motor Co., acting as traveling representative.

**Boston, Mass.**—Louis B. Adams has accepted a position with the Boston branch of the Velie as a salesman and advertising manager and assistant to Manager Harold D. Bornstein.

**Grand Rapids, Mich.**—Slootmaker Brothers will soon open their new garage on Madison Square at the head of Crawford street, where they are erecting a cement building 30 by 70 feet.

**Los Angeles, Cal.**—The Los Angeles Motor Car Co., southern California representative of the Locomobile, has moved from Pico and Hill streets to spacious quarters at Eleventh and Flower streets.

**Portland, Ore.**—The Twitchell Motor Car Co., Portland agent for the Cole, has moved from Union avenue and Wasco street on the east side to salesrooms on the west side at Fifteenth and Washington.

**Washington, D. C.**—Miller Brothers, one of the oldest motor car firms here, and who have handled the Ford and Velie for a number of years, have relinquished the agency for the latter make. Several parties are negotiating for the Velie agency.

**Dayton, O.**—H. N. Anderson, chief engineer of the Speedwell Motor Car Co., has tendered his resignation, to take effect December 1, 1911, and intends to give his entire time to his new process of rolling the teeth in steel gear blanks while hot.

**Omaha, Neb.**—The Racine-Sattley Co. is handling the Nyberg car now. This company has just contracted with Ray Robbins, of Malvern, Ia., for the Firestone-Columbus car for that county, and with Edward Gard for the Firestone-Columbus agency in Seward county, Nebraska.

**Detroit, Mich.**—J. R. Hall, for 5 years manager of the service department of the eastern district branch of the Lozier Motor Co. in New York city, has been appointed to the position of manager of the service department of the Lozier company at Detroit.

**Bismarck, N. D.**—W. E. Lahr has purchased the holdings of his brother, F. A. Lahr, in the Lahr Motor Sales Co in this city and has assumed entire management of the firm, which conducts an accessory jobbing business along with handling large territory on different lines of cars.

**Cincinnati, O.**—With the reorganization of the sales department of the Ohio Motor Car Co. comes the announcement that hereafter the service department, which heretofore has been conducted as the sundry department, will be under the direct supervision of the sales manager, and steps will

be taken at once for the establishment of five factory service depots, to be located in as many parts of the country.

**Omaha, Neb.**—The T. G. Northwall Co. has contracted for the Courier-Clermont car for this territory. The company has also taken the agency for the Lambert.

**San Antonio, Tex.**—The C. H. Dean Co. will handle the Ohio in this territory. The district headquarters and a factory service depot of the Ohio Motor Car Co. will be established at Dallas.

**Columbus, O.**—The Cummins Auto Sales Co., of 153 North Fourth street, has taken the central Ohio agency for the Krit for 1912. The territory includes six counties in the central part of the state.

**Kansas City, Mo.**—Christian & Co., who formerly handled the Hupmobile and Hupp-Yeats electric, have been succeeded by the Hupmobile Sales Co. of Kansas City. C. C. Christian is manager.

**Hampton, Ia.**—C. F. Roemer, dealer in carriages, implements and motor cars, has sold one-half interest in his business to J. E. Gibson. The firm will continue as the Roemer-Gibson Co., jobbing the Auburn and Marion motor cars in north-eastern Iowa.

**Des Moines, Ia.**—The United Motors Des Moines Co., which is the state organization for the United States Motor Co., will move this week to the quarters formerly occupied by the state agency for the Buick company. The Buick state agency has been closed and a local agency now

handles the business. George W. Jones is manager of the United Motors Des Moines company.

**St. Louis, Mo.**—The General Novelty Co., manufacturer of Bullfrog horn reeds, has removed to Twenty-third street and Locust streets, with the Auto Parts Sales Co.

**Cleveland, O.**—Frank L. Sessions has been appointed superintendent of the Standard Welding Co., Cleveland, Ohio. F. H. Meyers, for many years in the employ of this company, has been appointed assistant superintendent.

**Columbus, O.**—T. A. Sawyer has purchased the business of the Monnett Brass Co., located at 62½ East Spring street, and has changed the name to that of the Sawyer Auto Brass and Specialty Co. The concern will continue the business of making accessories and parts for motor cars.

**Philadelphia, Pa.**—The Mercer Automobile Co., of Trenton, N. J., has taken the distribution of its cars out of the hands of agents and in future it will be conducted through a branch house which has just been established at 620 North Broad street. W. A. Smith has been placed in charge as branch manager.

**Milwaukee, Wis.**—The Milwaukee and Wisconsin agency for the Packard, held by Welch Brothers Motor Car Co., has been supplanted by a direct factory branch, which will be located in the present Packard garage. O. G. Heffinger, sales manager for the Welch Brothers company, becomes general manager, and the tech-

## Recent Incorporations of New Concerns Which

**Dover, Del.**—Eastern Motor Truck Co., capital stock \$25,000; to manufacture and repair trucks; incorporators, J. H. Shields, C. W. Semmes, L. J. Eastman, B. T. Kenworthy and H. G. Eastburn.

**St. Paul, Minn.**—Northwestern Motor Supply Co., capital stock \$50,000; incorporators, P. F. Daly, J. C. Stegmeier, E. A. Teureaud, H. M. Daly and John Coates.

**Dallas, Tex.**—Michigan Tire Co., capital stock \$20,000; incorporators, Stephen Bridler, L. E. Burgess, J. L. Burgess and others.

**Louisville, Ky.**—Enterprise Vulcanizing Co., capital stock \$1,000; to repair tires; incorporators, C. P. Pruitt, J. J. Moran and M. C. Moran.

**Los Angeles, Cal.**—Motor Service Co., capital stock \$10,000; directors, W. Bailey, F. Gilman and W. Macnider.

**San Jose, Cal.**—Commercial Motor Truck Co., capital stock \$10,000; incorporators, P. H. Van Etton, H. L. Haehl, P. C. Berkefeld, H. P. Smith and G. H. McDonald.

**Camden, N. J.**—D. & S. International Airless Tire Co., capital \$100,000.

**Highmount, N. Y.**—Stein Tire and Rubber Co., capital \$10,000; to manufacture tires and other rubber articles; incorporators Jay N. Emley, Clarence E. Mundy and John N. Seelsa, all 15 William street, New York city.

**Chicago**—South Shore Garage Co., capital \$12,000; to deal in taxicabs and motor cars; incorporators Charles M. Mudge, L. C. Zward and E. A. Fleming.

**Los Angeles, Cal.**—Motor Service Co., capital \$10,000; directors W. M. Bailey, Fred Gilmer and W. Macnider.

**Cleveland, O.**—Moore and Ridgley Garage and Sales Co., capital \$10,000; incorporators William H. Moore, John Moore, A. V. Rigley, C. F. McGee and C. E. Alden.

**New York**—Colonial Sales Co., capital \$10,000; to deal in motor cars, accessories, equipment, etc.; incorporators Everett A. Levy, Louis V. Hanson and Benjamin H. Stern, New York city.

**Schenectady, N. Y.**—H. O. Craven Mfg. Co., capital \$50,000; to manufacture carburetors for gasoline engines, etc.; incorporators Horace O. Craven, Joseph A. Field and George W. Donnan, all of Schenectady, N. Y.

**Jersey City, N. J.**—Seventh Avenue garage, capital \$25,000; to operate garages; incorporators Charles H. Weller, Harvey B. Ball and Leo J. Cain, all of 75 Montgomery street, Jersey City.

**New York**—Manhattan Top and Body Co., capital \$50,000; to manufacture motor equipments, etc. Incorporators: Guy B. Radford, 610 West One Hundred and Eleventh street; Herman Schuler, 247 East Eighty-third street; Charles D. Heintze, 545 West One Hundred and Fifty-second street—all of New York city.

**Linton, Ind.**—Linton Garage Co., capital \$10,000; to deal in motor cars; incorporators and directors A. T. Custer, G. C. Porter and T. J. Holden.

**Dover, Del.**—Chestertown Automobile and Garage Co., capital \$25,000; to manufacture, keep for hire, lease, repair and deal in motor cars and supplies; incorporators H. Berge Simmons, A. Parks Rasin and L. Bates Russell, all of Chestertown, Md.

**Meridian, La.**—Meridian Auto School and Garage, Lauderdale county, capital \$10,000; incorporators W. M. Stone, Jr., J. M. McBreath, R. E. Stone and others.

**Portsmouth, Va.**—Mitchell Agency of Norfolk and Portsmouth, Inc., capital stock \$1,000-\$10,000; general motor car business; incorporators, H. T. Richardson, S. H. Butt and V. Butt.

**Cincinnati, O.**—Spring Hub Automobile Wheel Co., capital stock \$10,000; incorporators, J. G. Blackburn, John H. Kruse, J. T. Earle, Harry H. Weihe, Harry W. Plum, R. Freisens and Edgar M. Woolsey.

**Portsmouth, O.**—Portsmouth Automobile and Machine Co., capital stock \$10,000; to manufacture and deal in motor cars and accessories; incorporators, L. Poole, W. O. Ruhlman, Roy A. Oakles, F. Musser and Edward C. Reigel.



nical management will continue in the hands of H. W. Liddle. R. C. Chidester will be sales manager.

**Pittsburgh, Pa.**—The Federal Motor Car Co. hereafter will handle the Ohio line in connection with the Olds.

**Seattle, Wash.**—The S. & R. Tire Hospital is a new firm here. H. G. Stevenson and Roy E. Rossman are the proprietors and are located at 707 East Pike street.

**Boston, Mass.**—Smalley Daniels has taken on the agency in Boston and vicinity for the Detroit demountable rims with salesrooms in the Motor Mart, Park square.

**Denver, Colo.**—The Goodyear Tire and Rubber Co. has opened a new store at 1562 Broadway. The Denver branch now has four local salesmen and two traveling salesmen throughout the state.

**Baltimore, Md.**—Manager H. S. Block, of the Baltimore branch of the Stoddard-Dayton Automobile Co., announces that he has named Collins & Grossnickle, of Frederick, Md., as agent for Frederick county.

**New York**—The Ohio car will be handled in New York territory by the recently reorganized Zust Motor Co. The Zust company, in addition to handling the Ohio, also is American representative for the Zust, manufactured in Milan, Italy.

**Toronto, Can.**—The Ohio line hereafter will be handled in the Canadian territory by the American Motor Sales Co. of Toronto. Ground has already been broken for a new building which, in addition to housing the American Motor Sales Co., will

also be occupied in part by a factory service station of the Ohio Motor Car Co.

**Decatur, Ill.**—The Dawson Automobile Co. is to continue this season as dealer in Franklin cars.

**York, Pa.**—Prudencio Trejo, Buenos Ayres, South America, has taken the agency for the Pullman cars.

**Portland, Ore.**—L. E. Crowe, president of the Crowe Automobile Co., makes the announcement that he will have the Oregon distribution of the Rambler, Stutz and Krit touring cars and the Mais truck.

**Woodstock, Ont.**—The Woodstock Automobile Mfg. Co., Ltd., has been incorporated at Woodstock with a capital stock of \$50,000 and will establish a plant here. The directors are Alexander C. Applebaum, Herbert H. Thorpe and H. F. Greene.

**Los Angeles, Cal.**—Victor trucks are now in Los Angeles. J. Lawrence Eigholz, manager of the Commercial Motors Co., of this city, has the agency.

**Kansas City, Mo.**—Alfred Reeves, sales manager of the United States Motor Co., will also act as district manager of the west, a position formerly held by W. S. Hathaway.

**Boston, Mass.**—The Empire Motor Car Co., agent for the Empire and Stutz cars, and the Motor Car Co., agent for the Nance six, have moved from 94 Massachusetts avenue to 121 Massachusetts avenue in order to let the Stoddard-Dayton take their salesrooms. The Boston branch of the Velie also will be forced to move

as soon as its lease expires for the same purpose.

**Peoria, Ill.**—W. L. Penny has accepted service with the Ohio Motor Car Co. as district manager for the Ohio line, with headquarters at Peoria, Ill.

**Boston, Mass.**—The Malley Motor Vehicle Co., that has the agency for the Warren car, is to handle the Flanders electric in Boston and vicinity from its present salesrooms on Boylston street.

**Philadelphia, Pa.**—An eastern distributing agency for the Cutting has been established here, headquarters to be at 1431 Spring Garden street. Benjamin H. Kirkbride, formerly of the Reo car agency, is manager and his territory includes all of Pennsylvania, New Jersey and Delaware.

**Cambridge, Ill.**—P. A. Johnson, who has the Maxwell line for Henry, Stark and Peoria counties for the coming season, will have a garage and salesroom in Peoria for 1912. Mr. Johnson will assume the management of the Cambridge office and devote part of his time to the sales end from the Peoria office.

**Cleveland, O.**—A. D. McLachlan, formerly connected with the Royal Tourist Motor Car Co., Cleveland, O., for the past 10 years, has tendered his resignation to the above company and accepted a position as general sales manager for the Sanford-Herbert Co., of Syracuse, N. Y., which is making a light delivery wagon.

**Boston, Mass.**—Papers have been drawn up to sub-lease the salesrooms and service departments constructed for the Stoddard-Dayton and Alco cars on Commonwealth avenue to the Matheson company. This will give the Matheson the right wing of the mammoth new building in which are located the Winton and Locomobile.

**Birmingham, Ala.**—The H. W. Johns-Manville Co., has found it necessary to change the location of its office from 1220 Empire building to 606 Chamber of Commerce building. This office will continue under the management of W. H. Fleming. A line of J-M asbestos and magnesia products, electrical supplies, packings, etc., will be handled from this office.

**Detroit, Mich.**—Marburg Brothers, the importers of the Mea high-tension magnetos, have opened a branch office in Detroit. Roy J. Taylor has been appointed manager. Besides the Mea Marburg Brothers are importers of the S. R. O. ball bearings and they also have completed arrangements for the agency of the Marburg-Hagen springs.

**Scales Mound, Ill.**—L. E. Durrstein will erect this winter a two-story and basement garage 50 by 100 which will be used as garage and implement warehouse. The structure will contain two separate salesrooms and show rooms, while the rear of the main floor will contain a complete machine shop. Mr. Durrstein will continue with the Buick line for 1912.

## Will Be Identified With the Motor Industry

**Cincinnati, O.**—Muhle Motor Car Co., capital stock \$20,000; general motor car business; incorporators, Henry M. N. Muhle, J. C. Miller, Ida Muhle, Mary Smith and Elizabeth Muhle.

**Cleveland, O.**—Cuyahoga Motor Cycle Co., capital stock \$10,000; sell motor cars, operate garage and repairshop; incorporators, G. E. Hagenbuch, H. A. Blythe, W. C. Stuber, W. J. O'Neill and M. M. Sneyd.

**St. Paul, O.**—Brockshire & Robinson Co., capital stock \$20,000; manufacture motor cars, etc.; incorporators, F. M. Brookshire, W. T. Robinson, J. Schooler, H. L. Pentz and H. C. Brookshire.

**Cincinnati, O.**—Ohio Top Co., capital stock \$25,000; to manufacture and sell tops; incorporators, R. F. Kroger, W. Bossemeyer, Bion Place, A. L. Bossemeyer and L. H. Bossemeyer.

**Fremont, O.**—Northern Ohio Punctureless Tire Co., capital stock \$3,000; to manufacture punctureless tire; incorporators, Frank E. Nieset, Lewis Nieset, John J. Nieset, L. P. Nieset and C. N. Brown.

**New York**—International Motor Co., capital stock \$10,000,000; to sell Sauer and Mack trucks; C. P. Coleman, president; J. M. Mack, vice president; F. C. Richardson, treasurer; Vernon Monroe, secretary.

**New York**—Auto Sectional Tire Co., capital stock \$50,000; to manufacture tires; incorporators, H. L. Biener, I. Scherer and M. Scherer.

**Columbia, S. C.**—Etheredge Motor Co., capital stock \$10,000; incorporators, C. L. Etheredge and Robert L. Mitchell.

**St. Charles, Mo.**—Boenker Motor Plow Mfg. Co., capital stock \$24,000; to manufacture motor plows; incorporators, H. H. Boenker, Louis Ringe and L. G. Wilbrand.

**Augusta, Ga.**—Lamar Motor Co., capital stock \$25,000; incorporators, C. B. Lamar, J. J. Gewinner.

**Atlanta, Ga.**—Pinson-Jarvis Co., capital stock \$2,000; to do motor car repairing.

**Ocala, Fla.**—Florida Automobile and Sales Co., capital stock \$25,000; incorporators, B. R. Hinson, W. D. Frisbie, I. S. Craft and others.

**Newark, N. J.**—Commercial Motor Truck Construction Co., capital stock \$125,000; in-

corporators, W. Diamond, John True and W. E. Turton.

**Oklahoma City, Okla.**—Cadillac Co., capital stock \$25,000; incorporators, Charlton Barbour, F. A. Billings and W. Macintosh.

**Lewisburg, W. Va.**—Greenbrier Motor Co., capital stock \$10,000; incorporators, Mason Bell, F. F. Campbell, F. M. Arbuckle and K. M. Snyder.

**Chicago**—General Auto and Repairing Co., capital stock \$25,000; garage and taxicab business; incorporators, W. R. Potter, G. H. Davis, Jr., and Frank Potter.

**Chicago**—Gordon Electric and Mfg. Co., capital stock \$15,000; electrical devices and apparatus; incorporators, H. Jones, O. M. Wermich and M. W. Seabel.

**Flint, Mich.**—Little Motor Car Co., capital stock \$120,000; incorporators, W. H. Little, C. M. Begole, W. S. Ballanger and W. C. Durant.

**Brooklyn, N. Y.**—Finlay Auto Co., capital stock \$10,000; directors, W. Finlay, J. Scholl and E. Finlay.

**Wilmington, Del.**—Eastman Motor Truck Co., capital stock \$25,000; incorporators, J. H. Sheldis, C. S. Semmes and H. G. Eastburn.

**Boston, Mass.**—Vera Motor Car Co., capital stock \$60,000; incorporators, G. M. Poland and A. M. Sweeney.

**Evansville, Ind.**—F. W. McNeely & Co., capital stock \$25,000; to deal in motor cars; directors, Chester Rankin, F. W. McNeely and Alice McNeely.

**New York**—Owner's Protective Association, capital stock \$25,000; to deal in motor supplies, etc.; incorporators, H. E. Trodile, H. A. Trebing and A. J. Davenport.

**Bradford, Pa.**—Bradford Auto Exchange; incorporators, F. H. Reed, L. I. Holmes, F. H. Deagan, S. L. Tibbitts and F. D. Gallop.

**Erie, Pa.**—Stirling Brothers Co., capital stock \$15,000; to deal in motor cars.

**Akron, O.**—The Diagonal Block Tire Co., capital stock \$25,000; to manufacture motor car and motor cycle tires and other rubber goods; incorporators, J. A. Swinehart, W. R. Talbot, Frank R. Talbot, A. L. Siegrist and W. M. Graham.



# Legal Lights and Side Lights

## SOCIALISTS BECOMING RABID

TO prohibit any person under 21 years of age from operating motor cars in the city of Milwaukee is the object of an ordinance now being framed by the socialist administration for presentation to the common council. The proposition has aroused a storm of indignation and it is thought at this time that such a law will have slight changes for passage.

The object of the ordinance is claimed to be to curb joy-riding instincts of the young. It would also prohibit girls under 18 years of age from being in any motor car operated by any person under 21 years of age, unless they have the consent of parents or guardians.

The real reason for the ordinance is that the lawyer who suggested and is now framing it is attorney for several theaters in Milwaukee which would be affected by a proposed ordinance prohibiting minors from attending any public performance during the school hours. In the course of his objections to the theater ordinance, the attorney stated that an ordinance prohibiting youths and girls from going joy-riding is much more of a necessity than one which would prevent them from enjoying innocent fun at a theater. Thereupon the council committee asked him to frame an anti-joy ride ordinance.

Leading attorneys doubt the right of the municipality to legislate all persons under 21 from operating motor cars. It would be an encroachment upon the state law, which restricts the operation of motor vehicles to all person over 16 years, excepting that a person 16 years or younger may drive when accompanied by parent or guardian.

The legislative committee of the Milwaukee Automobile Club will take the matter in hand as soon as it comes to a head.

## CLASH OVER PASTEBOARD TAGS

St. Louis dealers are in a controversy with the secretary of state in regard to the legality of the practice of dealers of issuing pasteboard duplicates of the dealer's license to purchasers of new cars, for use until the state license has been obtained. The secretary of state, who has jurisdiction over the issuing of licenses, recently announced that any motorist using a pasteboard tag would be subject to arrest and fine. He announced that dealers may for a reasonable time lend one of the four metal duplicate license tags which are furnished them to purchasers of new cars. The dealers maintain that it is the intent of the law that the dealer have the four duplicate plates for use on his own demonstrators, and that it

is their right to make pasteboard duplicates for the use of buyers until the regular license may be obtained. They announce their intention of testing the matter in the courts, if necessary.

## OHIO TAG RULING

Attorney General Hogan of Ohio has rendered several opinions recently which are of interest to firms and corporations acting as agents for motor cars in the Buckeye state. It is held that when a partnership changes its name it is not entitled to the use of the old registration and number plates but must register anew and secure different number plates. The same is true where one or more members withdraw from a firm and also where new members are taken in. The attorney general holds that since the principal purpose of the law is identification, it is necessary to maintain the firm or corporation the same during the calendar year if the registration is to hold during the year. The opinion was given upon a request from the registrar of motor cars who had a number of cases to come before him.

## WANT LIGHT LAW ENFORCED

There is much dissatisfaction among Massachusetts motorists over the failure of many police officers throughout the state to see that the law passed by the last legislature compelling all vehicles using the highways at night to carry lights of some sort. The law is plain enough, but many people are ignoring it completely. There are a number who comply with the law, however. What the motorists believe is that word has been passed around among the farmers and others in the rural sections to ignore the law and then an effort may be made to repeal it at the next session of the legislature under the guise of its being non-enforceable and a dead-letter law.

The farmers fought it for several years because they did not want to cut down the liability in accident cases which they believed would result in case they were hit by a motor car. There have been many cases where the motorists have been held up for settlement of good-sized amounts when the accidents have been trivial rather than fight the cases in court, and the farmers knew this form of graft would be cut off. They would rather take chances with their lives than lose a bit of money, and have a \$50 horse appraised at several hundred and a rickety team sometimes billed at a price it never cost when new.

What makes the motorists sore is the fact that police officials are very vigilant to see that motorists always have their lights going when some of these same officials shut their eyes to the horse-drawn vehicles not using lights. The law is not a hardship, as it is not compulsory in cities

and towns where the street lamps are less than 500 feet apart. The motorists do not want to take the initiative in prosecutions, but it is felt that something should be done, and in case an effort is made to repeal the law at the next session of the legislature they will go after violators and show them it must be enforced, and, further, any instances where police officials refuse to do their duty charges of neglect will be preferred against them. But the motorists are hoping for the easier method.

## MILWAUKEE SEES THE LIGHT

The entering wedge to a condition when all vehicles will be required to carry lights is seen in an ordinance about to be passed by the common council of Milwaukee, Wis. The ordinance requires that lights be kept burning on any and all vehicles left standing on streets or in alleys from 1 hour after sunset to 1 hour before sunrise. A number of accidents to motor cars have occurred recently because horse-drawn vehicles left unattended on streets or in alleys have been unseen and collisions resulted.

## WANT CAR THIEVES PUNISHED

At a meeting of the board of governors of the Columbus Automobile Club, of Columbus, O., the action of the Cleveland Automobile Club in starting a movement to have a bill passed by the next session of the Ohio legislature to place car thieves in the same category with house-breakers and horse-thieves, and have them sent to the penitentiary, was strongly endorsed.

## CAN SIGN OWN BONDS

The municipal court of the city of Chicago has decided that after November 15 a motorist arrested for violation of the speed, tag or light ordinances can sign his own bond, provided he owns property or the car which he is driving. The bond will be \$400 in each instance.

## UNREGISTERED CAR A TRESPASSER

That the driver of an unregistered car is a trespasser on the public highway, and, if the machine is injured by a collision with a street car, cannot hold the trolley company liable unless the injury was wilfully and wantonly done, is the decision filed in the common pleas court of York county, Pennsylvania, by Judge Wanner. The case in which this ruling was made is that of N. H. Bortner against the York Street Railways Co., in which a verdict of \$358 was rendered March 23, 1911, for the plaintiff for the demolition of his car in a collision with a trolley car in West York borough. At the time of the accident the plaintiff's car was unregistered and he had no license to operate it in Maryland, where he resided, or in this state.